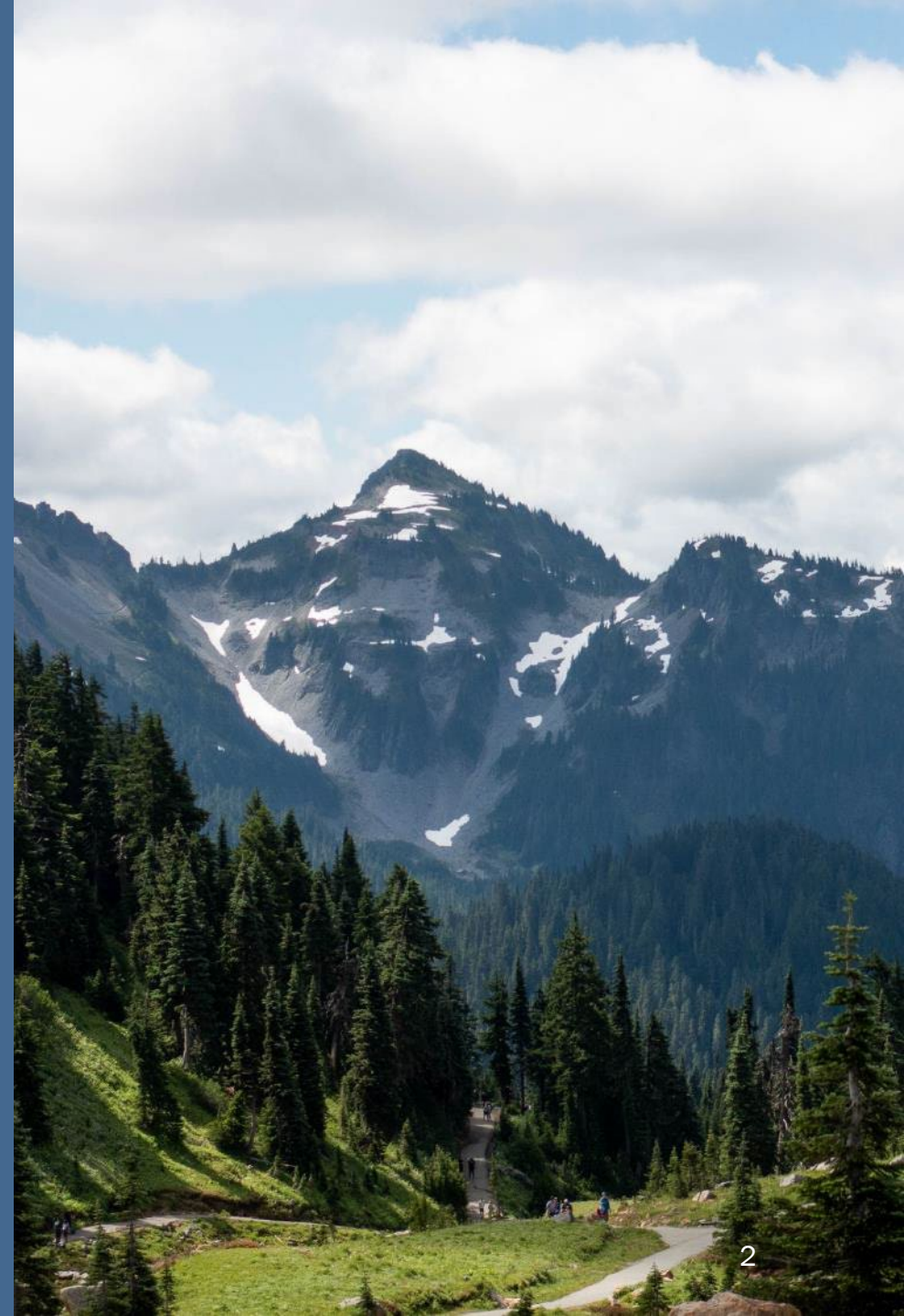


Water Supply Availability Committee

July 24, 2024



Recording!



Agenda



Time	Agenda item	Responsible
10:00 a.m.	Welcome and agenda Recap: Drought declaration and implication	Caroline Mellor, Ecology
10:10 a.m.	Yakima Project	Chris Lynch, BOR
10:20 a.m.	Regional Climate Setting / ENSO	Karin Bumbaco, OWSC
10:35 a.m.	Streamflow and Groundwater	Nick Sutfin, USGS
10:50 a.m.	Mountain Conditions	Matt Warbritton, NRCS
11:00 a.m.	Water Supply Forecasts	Amy Burke, NWRFC
11:15 a.m.	Discussion: What conditions and concerns do folks see on the ground?	All participants
11:25 a.m.	Wrap-up and next steps	Caroline Mellor, Ecology

Committee Role

WSAC provides an important consultative and advisory role to Ecology related to:

- Current and forecasted water supply conditions;
- Whether the hydrologic drought threshold has been met or is likely to be met.

Meeting Objectives

- Share pertinent info and assess water supply conditions in Washington.

Drought Emergency Declaration

On April 16, 2024,
Ecology declared a
Statewide drought due to
low snowpack and warm
and dry forecast.

Limited exceptions for
Puget Sound metro areas
with healthy water
storage.



Drought Conditions

Drought conditions - two requirements:

- 1. Hydrologic threshold** – An area is receiving, or is projected to receive, less than seventy-five percent of normal water supply.
- 2. Hardship threshold** – Water users and the environment are or are expected to experience undue hardship.

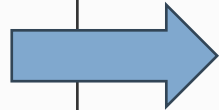
This Committee advises on the hydrologic threshold.

See: [RCW 43.83B.405](#) and [WAC 173-166-050](#).

Drought Conditions: Water Supply Factors

Factors for water supply:

- Water Year to Date:
 - Snowpack
 - Precipitation
 - Temperature
 - Soil moisture
- Forecasts
 - Streamflow
 - Precipitation
 - Temperature
 - Soil moisture

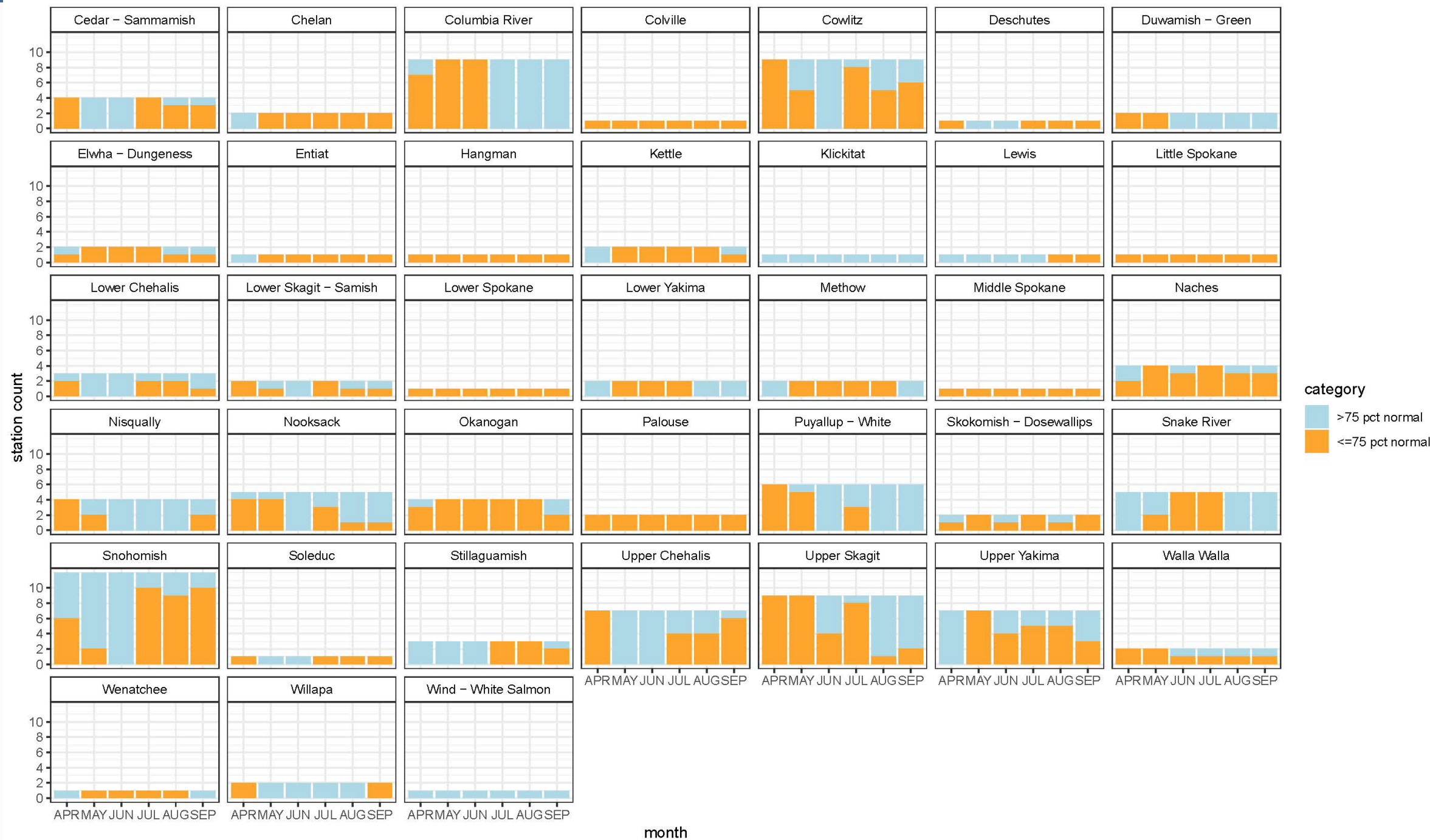


With all factors combined, the hydrologic threshold for drought is met.



Hurricane Ridge Webcam, National Park Service
Olympic National Park

Monthly Forecasts aggregated by WRIA



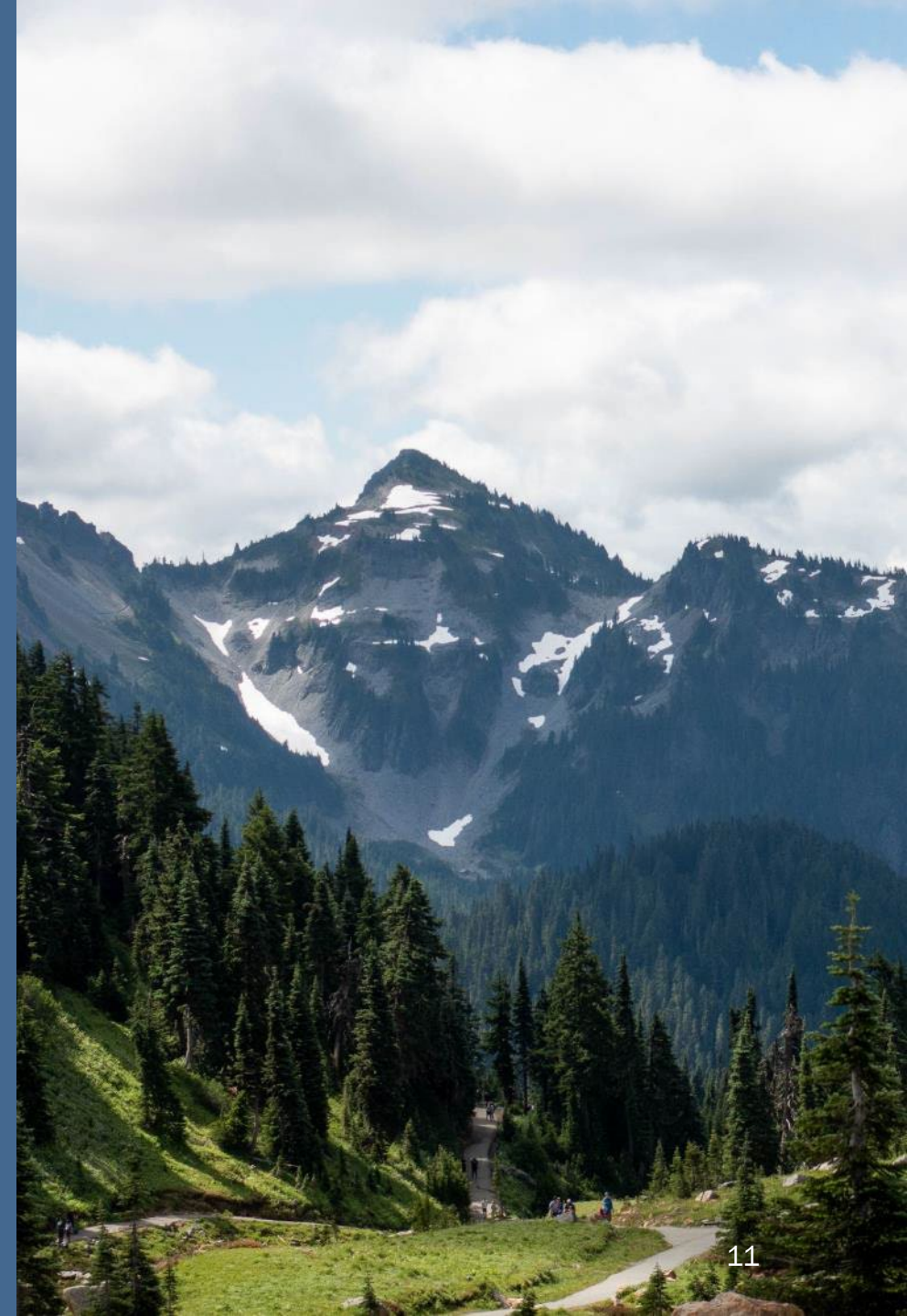
Anticipated Hardships

- Instream flows, fish and wildlife
- Agricultural and livestock
- Public water systems and domestic uses





Implications of a Drought Declaration



What Does a Declaration Do?

Provides Ecology with the authority to:

1. Expedite emergency water transfer applications.
2. Establish a grant program to mitigate hardships to water users and the environment.



Emergency response funding

Grants to governmental entities:

- Federally recognized tribes.
- Counties, cities, and towns.
- Water and sewer districts formed under chapter 57.02 RCW.
- Public utility districts formed under chapter 54.04 RCW.
- Port districts formed under chapter 53.04 RCW.
- Conservation districts formed under chapter 89.08 RCW.
- Irrigation districts formed under chapter 87.03 RCW.
- Watershed management partnerships formed under RCW 39.34.200.

Interagency agreements to state agencies

Drought response grants - Washington State Department of Ecology

Water resources drought response grants

This funding opportunity opens April 17, 2024.

We issued a [Drought Emergency Declaration](#) on April 16, 2024. On April 10, 2024, the state Executive Water Emergency Committee determined that specific areas in Washington meet the statutory criteria for drought conditions described in [Chapter 43.83B RCW](#), "water supply is less than 75 percent of normal, resulting in undue hardships to water users and the environment." Under [SHB 1138, Emergency Drought Response](#), funding became available to alleviate immediate conditions from this drought. The adopted [emergency drought funding rule](#), Chapter 173-167 WAC, remains effective until Aug. 14, 2024.

Ecology may extend the emergency rule based on evolving drought conditions. If the emergency rule is extended, these guidelines will be updated to reflect the extended date to which applications may be submitted.

I want to...

- [Apply for or manage a grant or loan](#)
- [Get guidance for managing a grant or loan](#)
- [Learn more about the 2024 drought](#)



Presenters



Discussion Question

For all meeting attendees:

What conditions and water supply concerns are folks seeing on the ground?

Example Drought Response Grant Projects

Agriculture or livestock

- Purchasing or leasing water or water rights to be used during the drought period for instream or out-of-stream beneficial uses.
- Developing alternate source(s) of water supply, or mitigating use of existing emergency sources, to supplement an insufficient source.
- Replacing intakes, pumps, and related accessories.

See: [2024 Drought Response Grant Funding Guidance \(wa.gov\)](https://www.wa.gov/2024-Drought-Response-Grant-Funding-Guidance)

Example Drought Response Grant Projects

Public water supply

- Developing alternate source(s) of water supply, or mitigating use of existing emergency sources, to supplement an insufficient source.
- Transportation of emergency water supplies for public health and sanitation.
- Implementing water conservation strategies.

See: [2024 Drought Response Grant Funding Guidance \(wa.gov\)](https://www.wa.gov/2024-Drought-Response-Grant-Funding-Guidance)

Example Drought Response Grant Projects

Fisheries and wildlife

- Projects that eliminate migration barriers, such as temporary structures to increase flow velocity or depth.
- Modifying stream channels adjacent to a hatchery to ensure passage to the facility.
- Stream channel modification such as trenching, sandbagging, or creating berms to protect spawning gravels or to provide migratory channels for fish passage.

See: [2024 Drought Response Grant Funding Guidance \(wa.gov\)](https://www.wa.gov/2024-Drought-Response-Grant-Funding-Guidance)

Communications

- [WSAC website](#) updated with meeting materials and presentation recording.
 - Will be updated within a week of this meeting.
 - Next meeting tentatively July 24.
- April 16, 2024, Press release: [Apr. 16 - Drought Declaration - Washington State Department of Ecology](#)
- Updated drought website: [Drought Response - Washington State Department of Ecology](#)



Thank you

Contact: Committee Chair
Caroline Mellor
Statewide Drought Lead
Caroline.Mellor@ecy.wa.gov



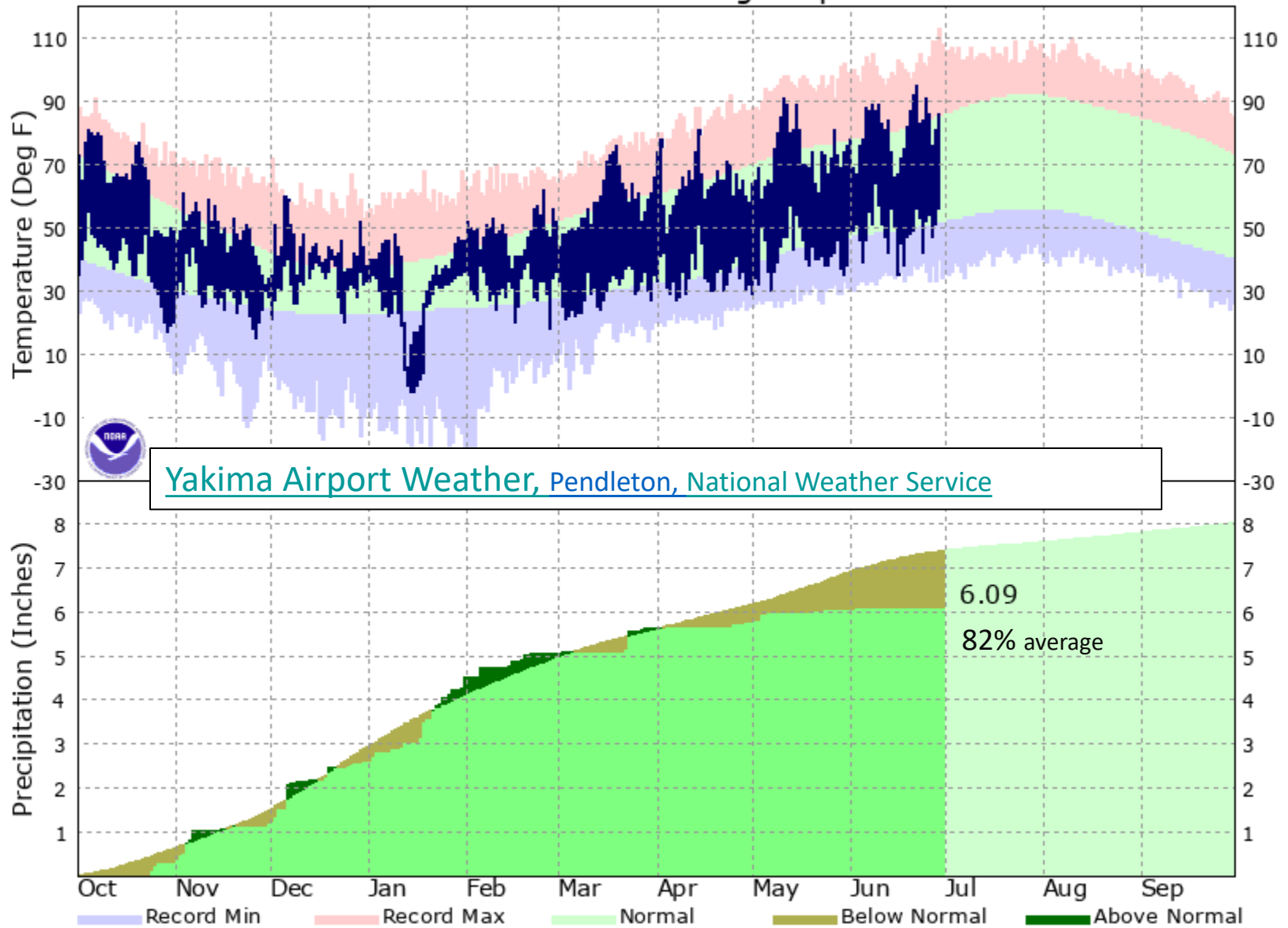
— BUREAU OF —
RECLAMATION

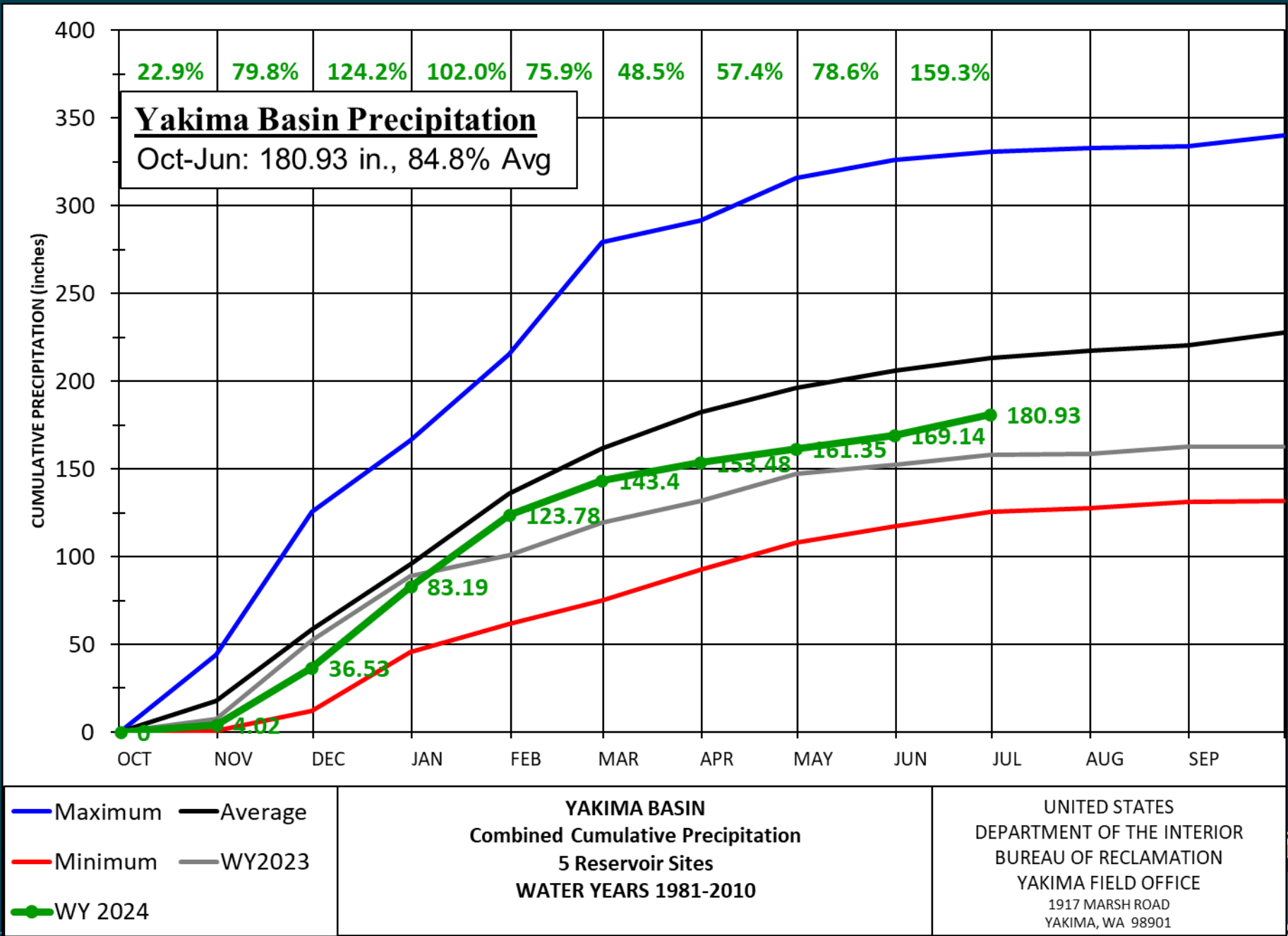
Yakima Basin Water Supply Update

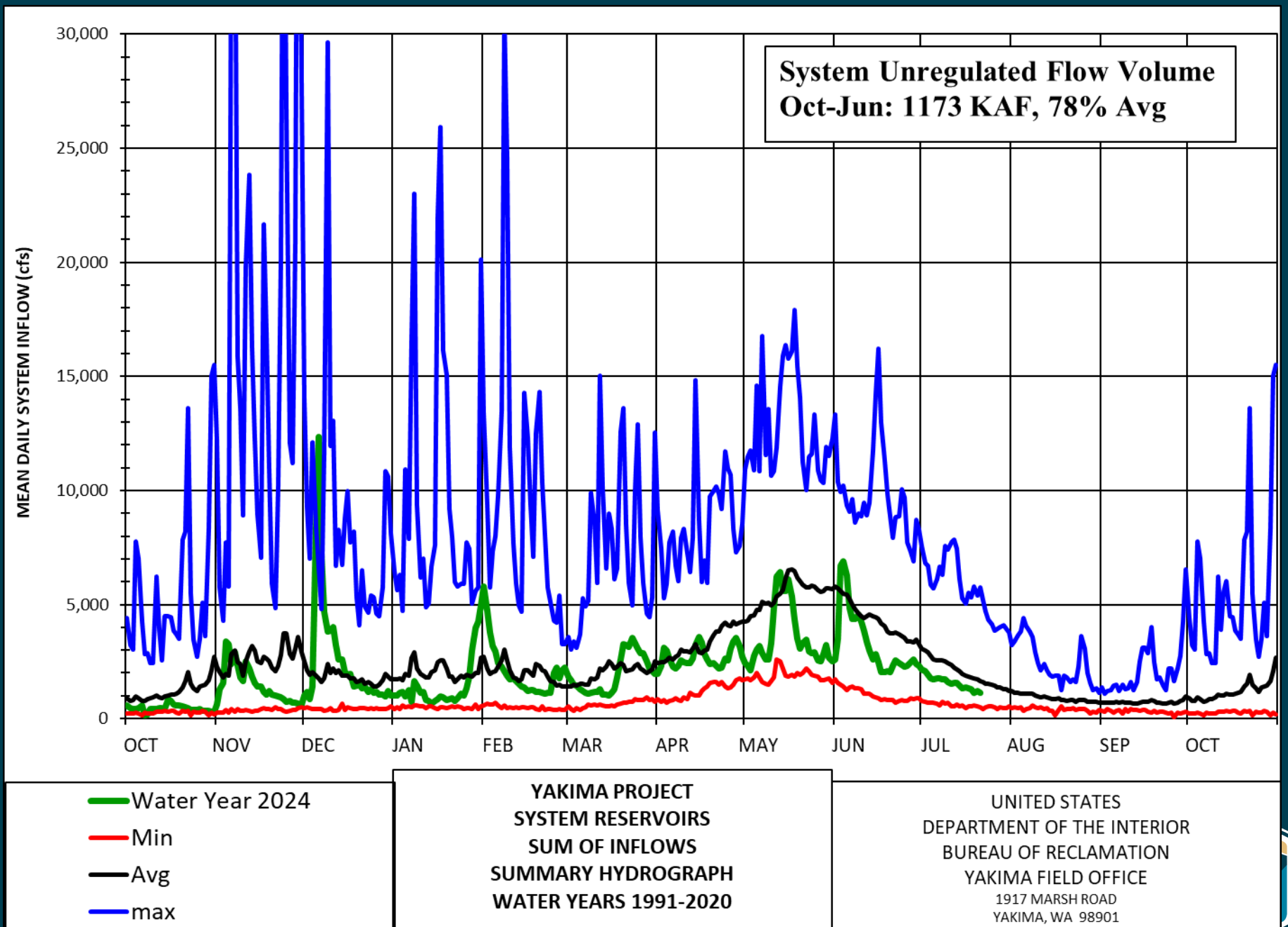
For WaWSAC, July 24, 2024

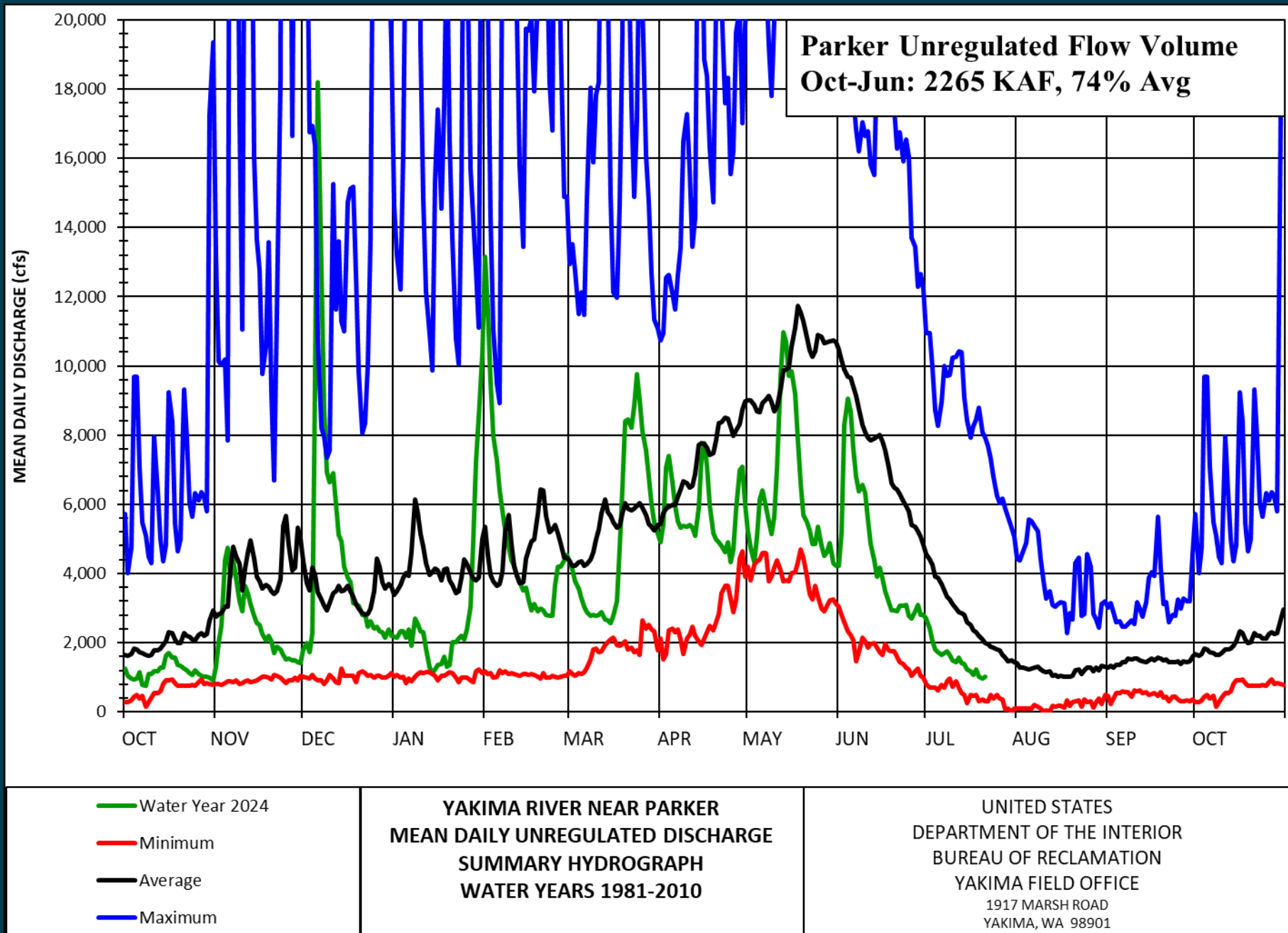


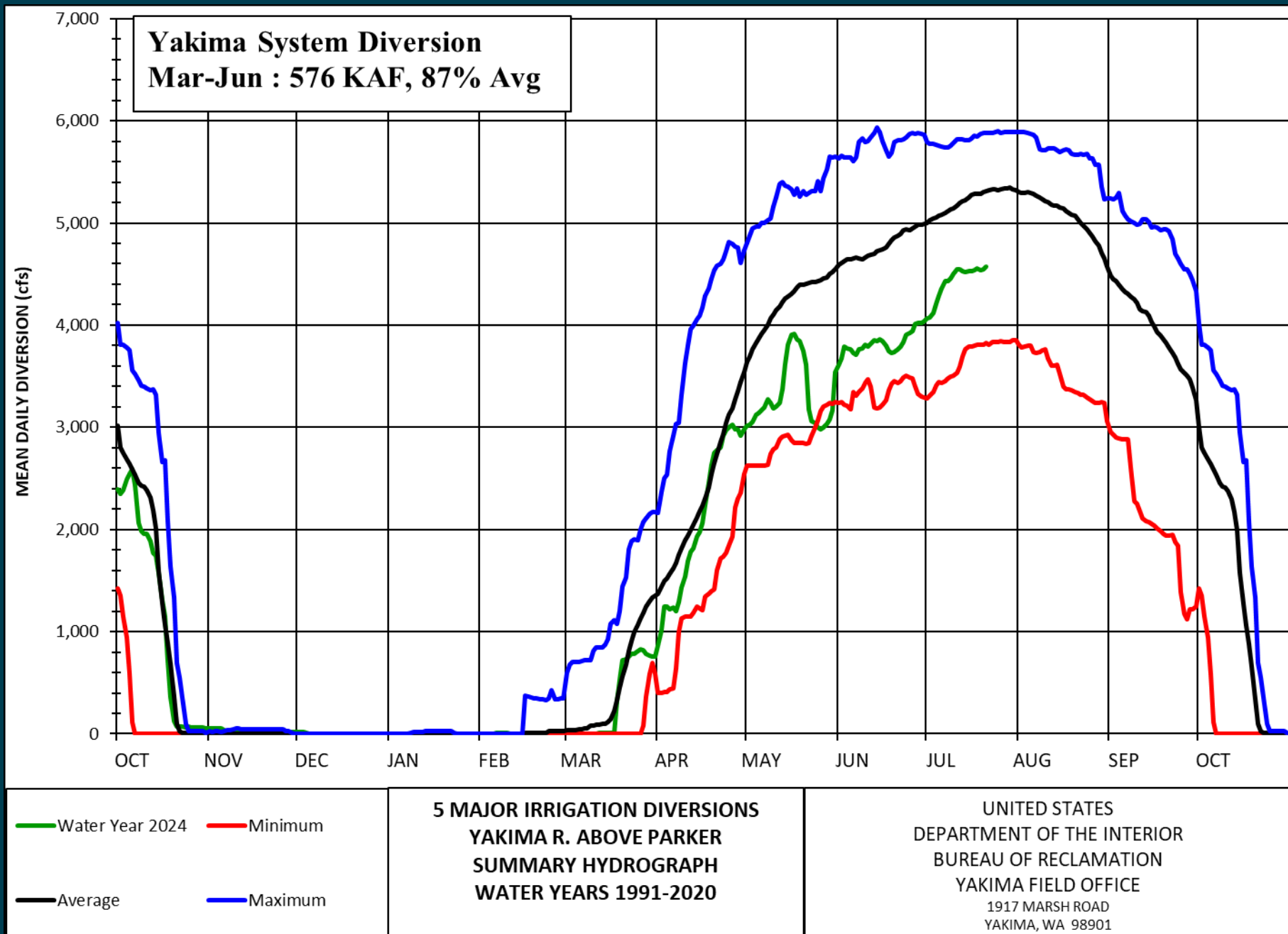
KYKM - Oct 2023 Through Sep 2024

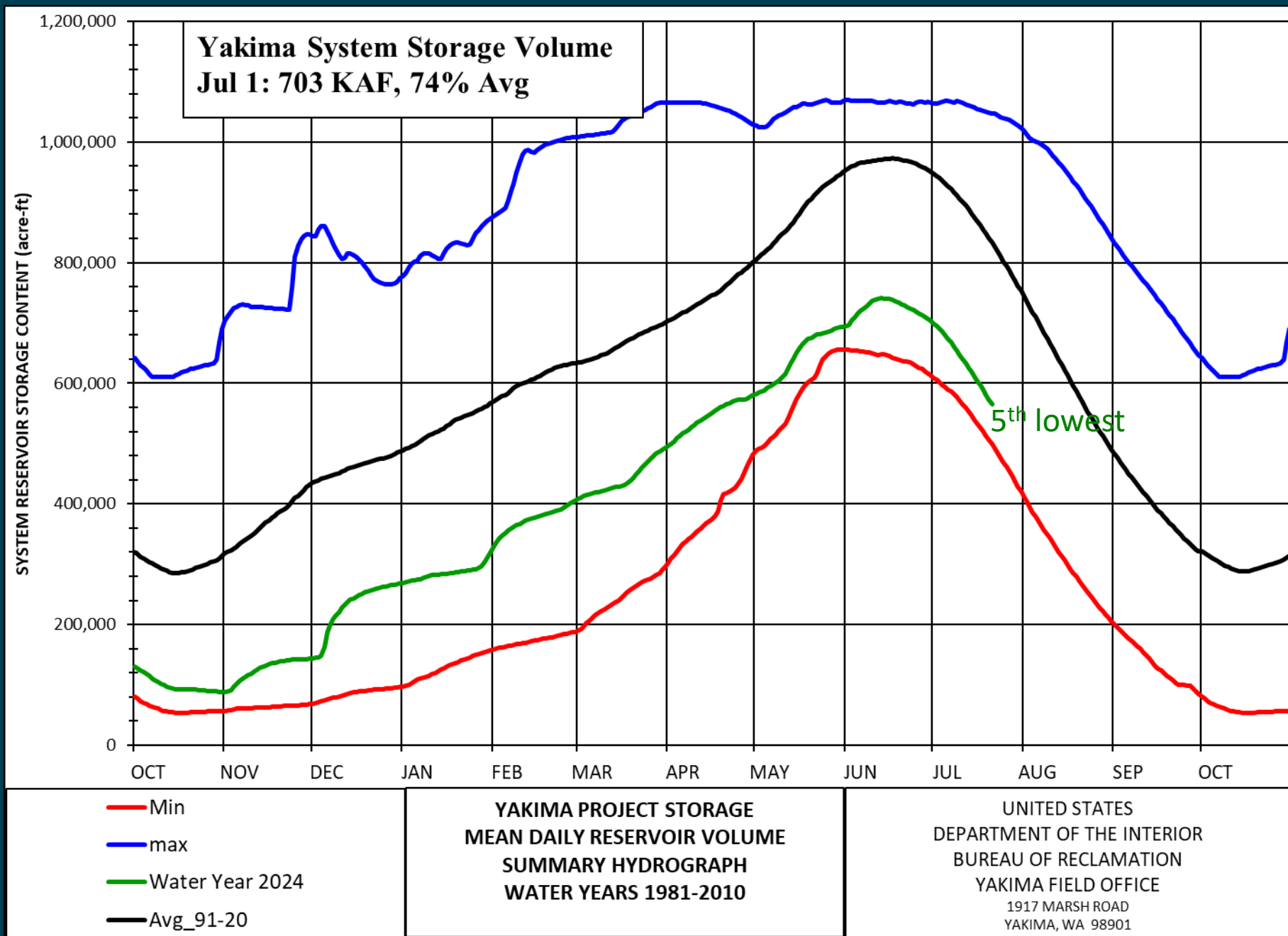












Prorationing progression

Year	Start of Proration	Storage Control Date	Mar	Apr.	May	Jun	mid-Jun	Jul	mid-Jul	Aug	Sep
2023	1-Jun	1-Jun	86%	82%	86%	77%	73%	72%	72%	72%	73%
2024	21-May	14-Jun	72%	63%	54%	47%	48%	51%	50%		



Hydrologic Summary

- Yakima Reservoir Storage is 5th lowest since 1971
- July has been very hot and dry.
- Prorationing is 50% (will be updated August 6)
- Expect very low reservoir storage at season's end.
- Minimum target flow is 332 cfs.
- Lowest tier spawning and incubation flows.



Current Conditions and Seasonal Outlook

Karin Bumbaco
Office of the Washington State Climatologist
Climate Impacts Group
University of Washington
July 24, 2024

Welcome, Guillaume!



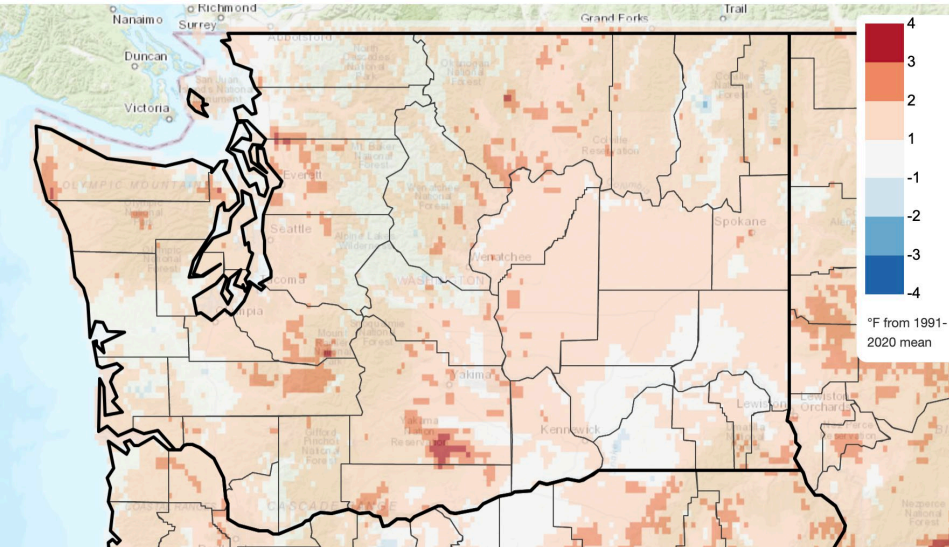
- Guillaume has 15 years experience working on climate change impacts and adaptation in the PNW with a focus on flooding and water availability
- Frequent collaborator of OWSC, including trend analyses, scientific synthesis, and on our strategic plan
- Karin will continue to be the OWSC point person on WSAC

Water Year to Date

Temperature

Mean Daily Temperature Anomaly, Since Oct 1st

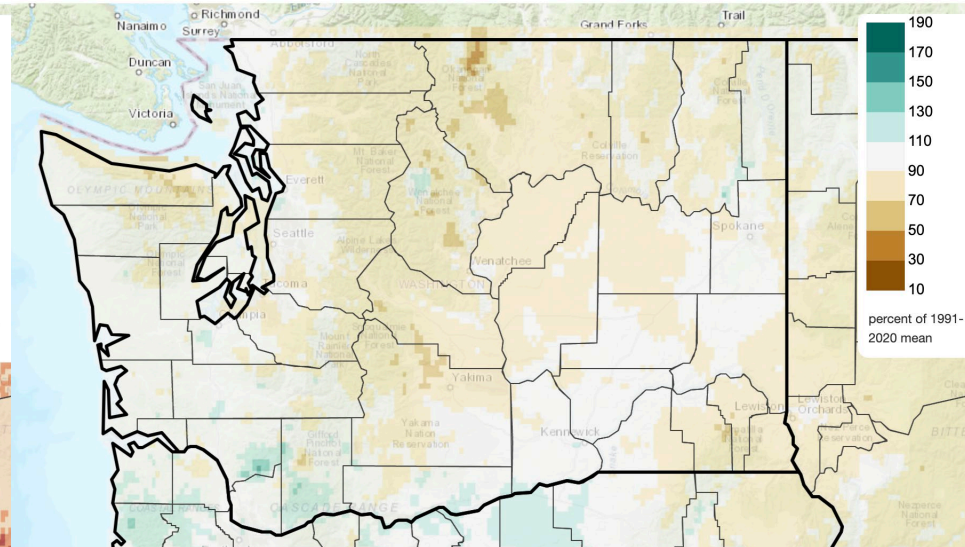
2023/10/01 - 2024/07/20



Precipitation

Total Precipitation Anomaly, Since Oct 1st

2023/10/01 - 2024/07/20



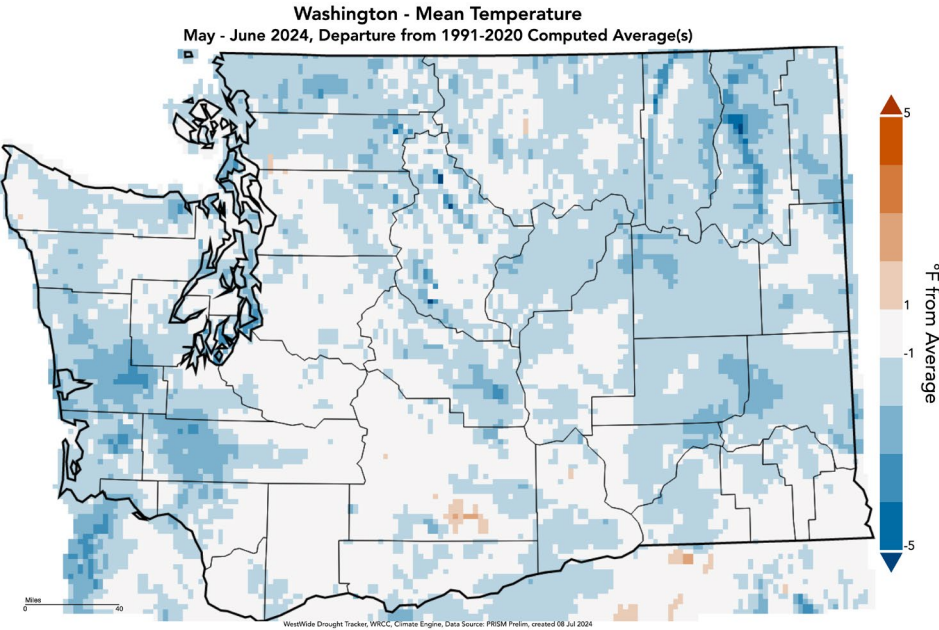
[Climate Toolbox](#)

- Averaged statewide, Oct-Jun ranks as the 15th warmest on record (+0.9°F above normal)*
- Averaged statewide, Oct-Jun ranks as the 50th driest (90% of normal; -3.83")

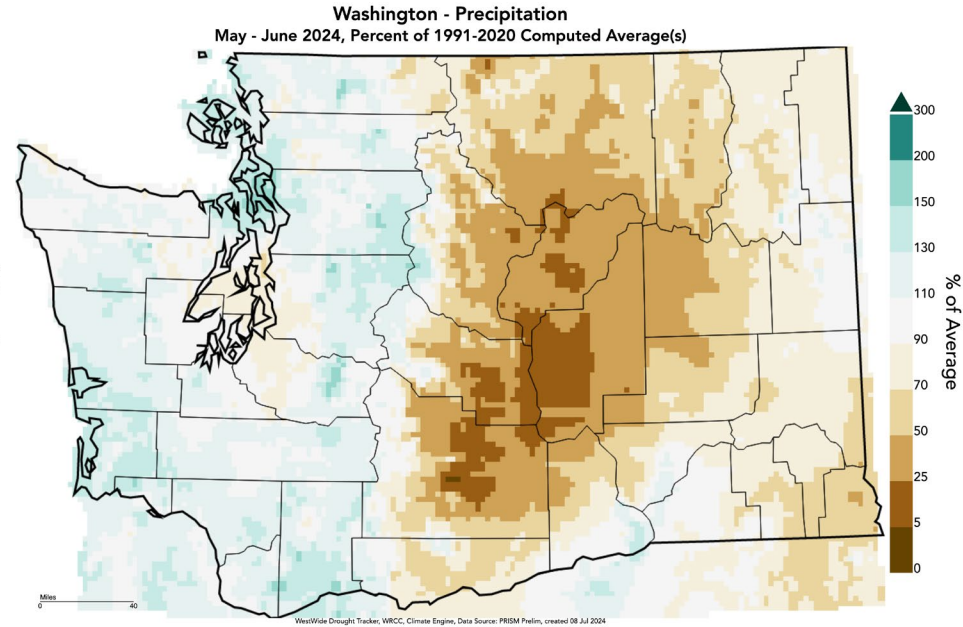
*Records since 1895; Normal is 1991-2020

May-June

Temperature



Precipitation



Western Regional
Climate Center

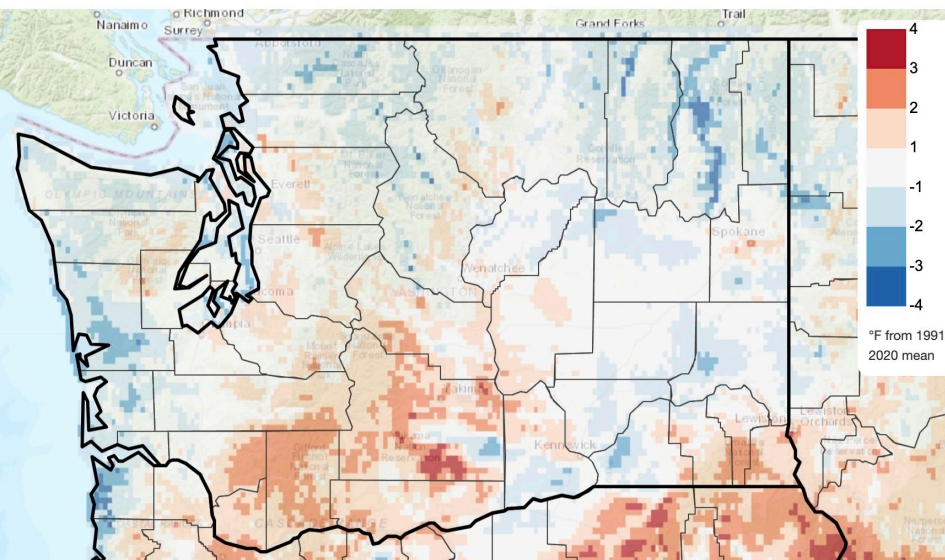
- Average statewide May-Jun temperatures (-0.7°F) were not as cool as 2022 but they were cooler than all other recent years since 2012

June 2024

Temperature

Mean Daily Temperature Anomaly, Last Full Month

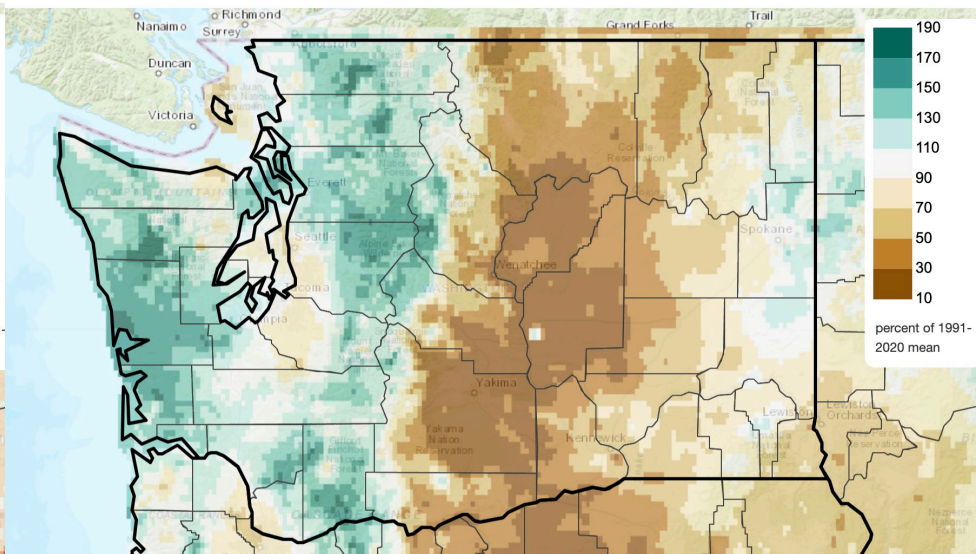
2024/06/01 - 2024/06/30



Precipitation

Total Precipitation Anomaly, Last Full Month

2024/06/01 - 2024/06/30



Climate Toolbox

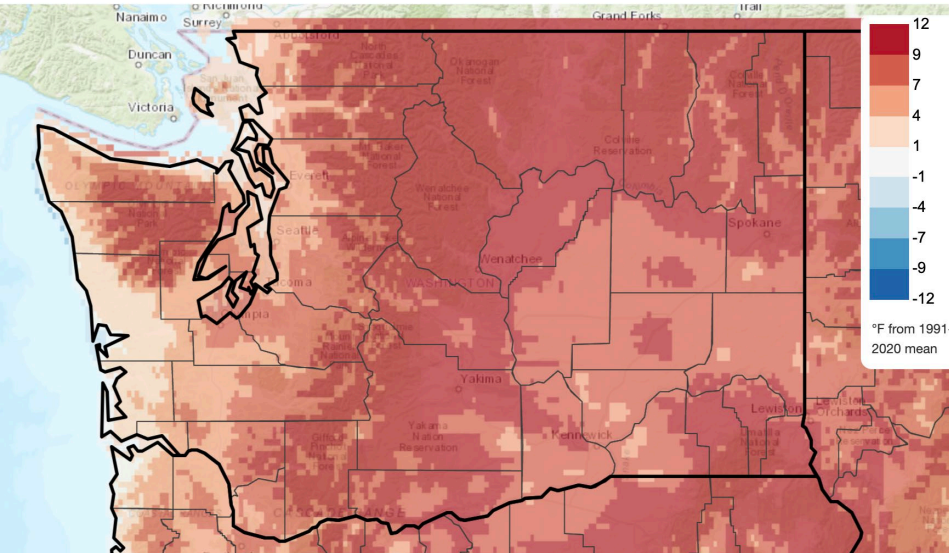
- Averaged statewide, June temperatures were equal to the 1991-2020 normal
- Averaged statewide, June precipitation was near-normal (108% of normal)

*Records since 1895; Normal is 1991-2020

July 2024

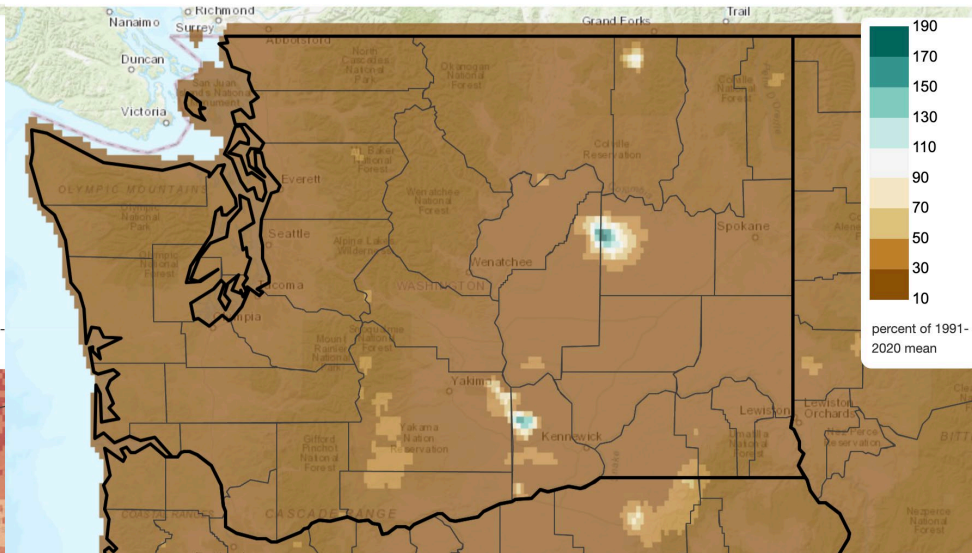
Temperature

Mean Daily Temperature Anomaly, Last 15 Days
2024/07/06 - 2024/07/20

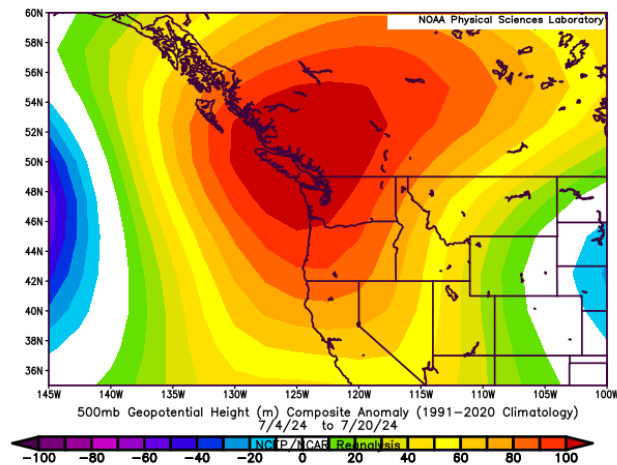


Precipitation

Total Precipitation Anomaly, Last 15 Days
2024/07/06 - 2024/07/20



500 mb Geopotential Height Anomalies



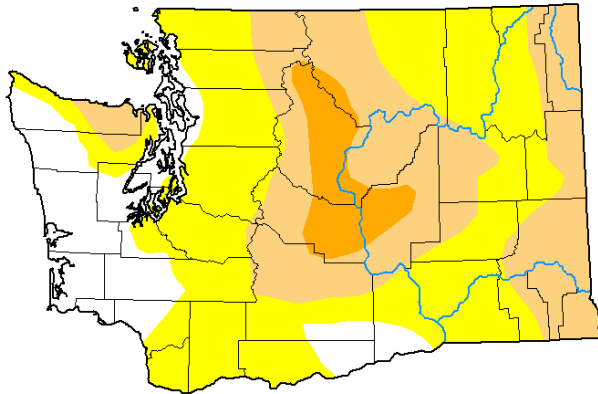
Climate Toolbox

- Record # (17) of consecutive days 80°F or above at Seattle: 7/4-7/20
- Record # (18 and counting) of consecutive days 90°F or above at Spokane: 7/5-7/22

U.S. Drought Monitor

U.S. Drought Monitor Washington

July 16, 2024
(Released Thursday, Jul. 18, 2024)
Valid 8 a.m. EDT



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

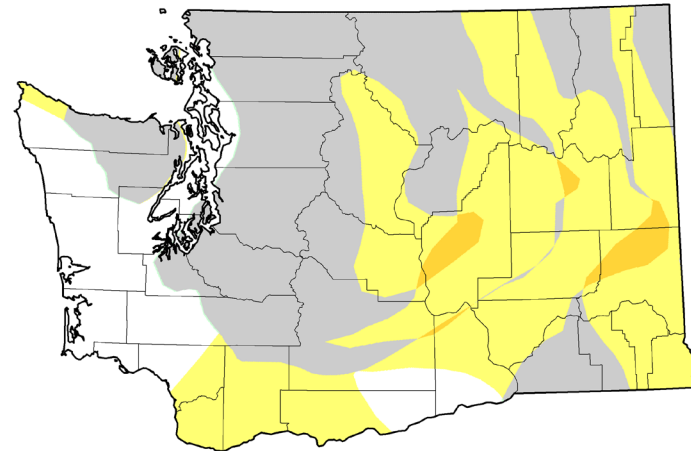
Author:

Brian Fuchs
National Drought Mitigation Center



droughtmonitor.unl.edu

U.S. Drought Monitor Class Change - Washington 4 Week



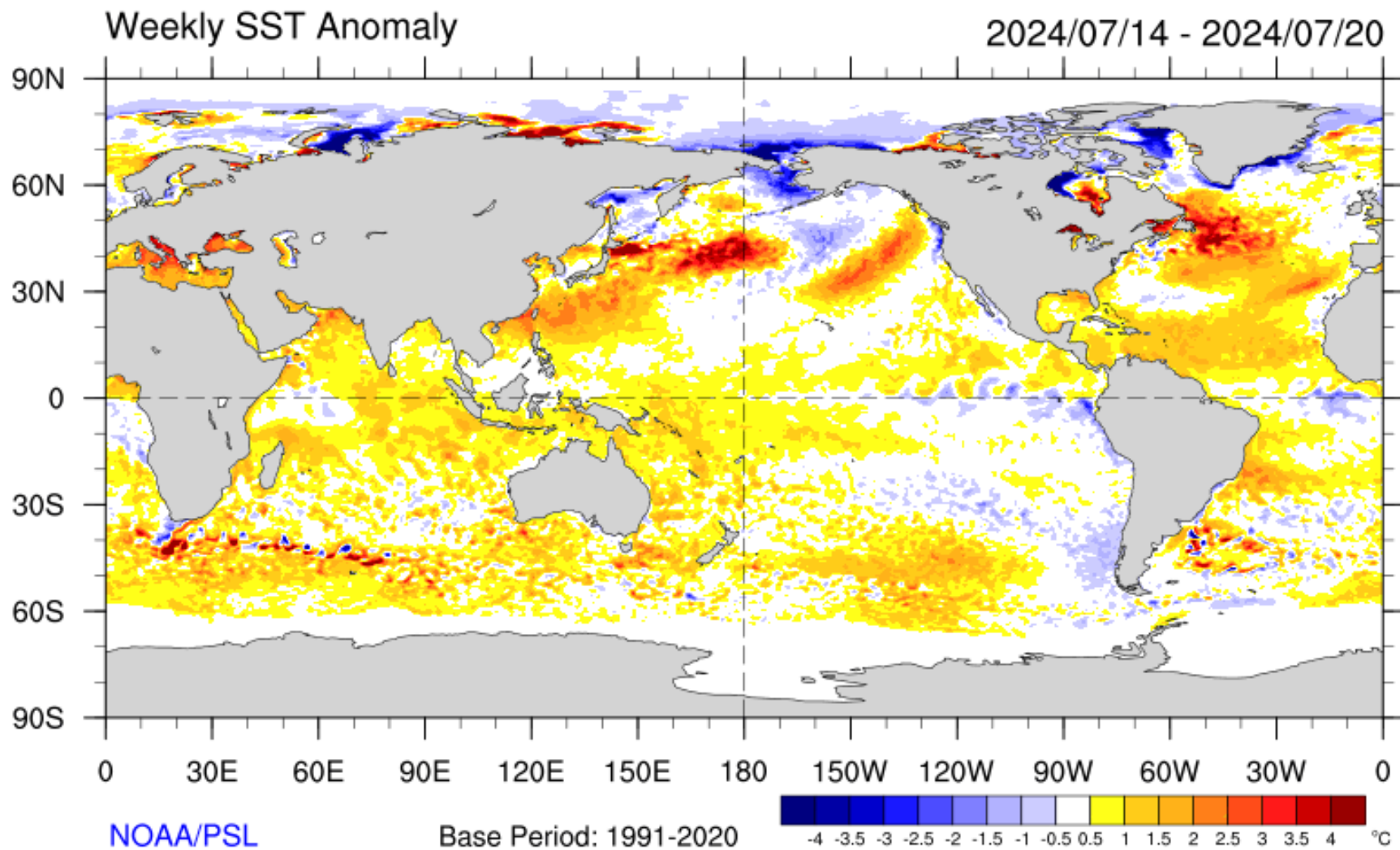
- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

July 16, 2024
compared to
June 18, 2024

droughtmonitor.unl.edu

Sea Surface Temperature Anomalies: July 14-20,

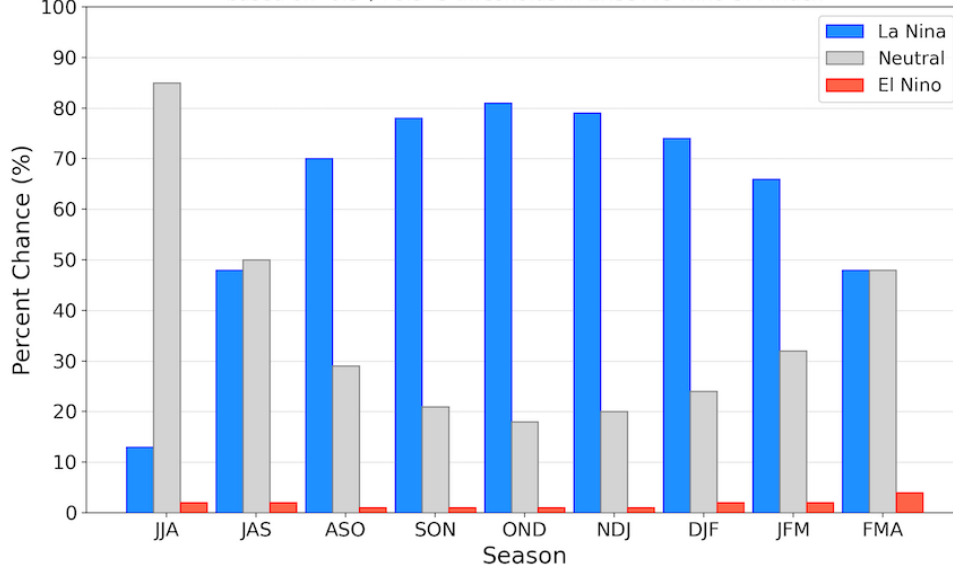
2024



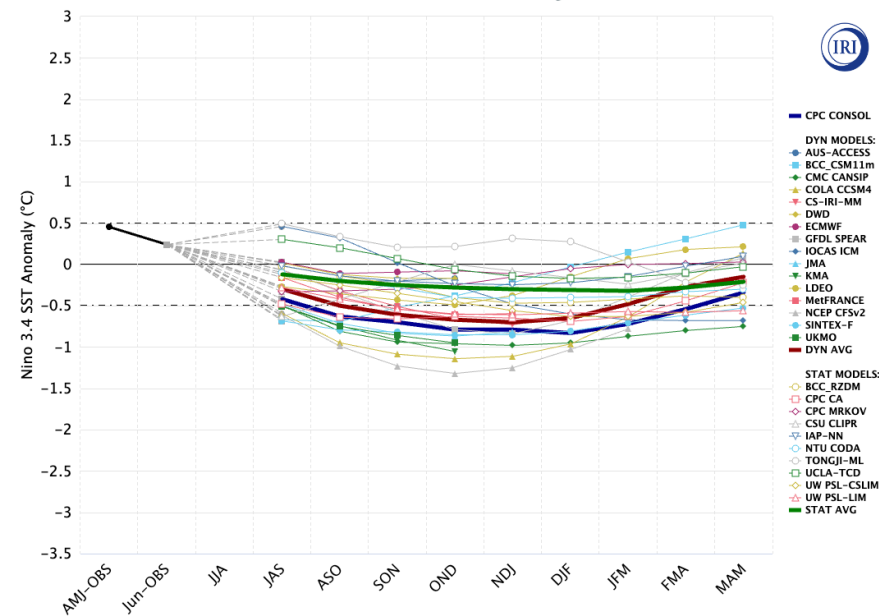
Neutral Conditions

Official NOAA CPC ENSO Probabilities (issued July 2024)

based on $-0.5^{\circ}/+0.5^{\circ}\text{C}$ thresholds in ERSSTv5 Niño-3.4 index



Model Predictions of ENSO from Jul 2024

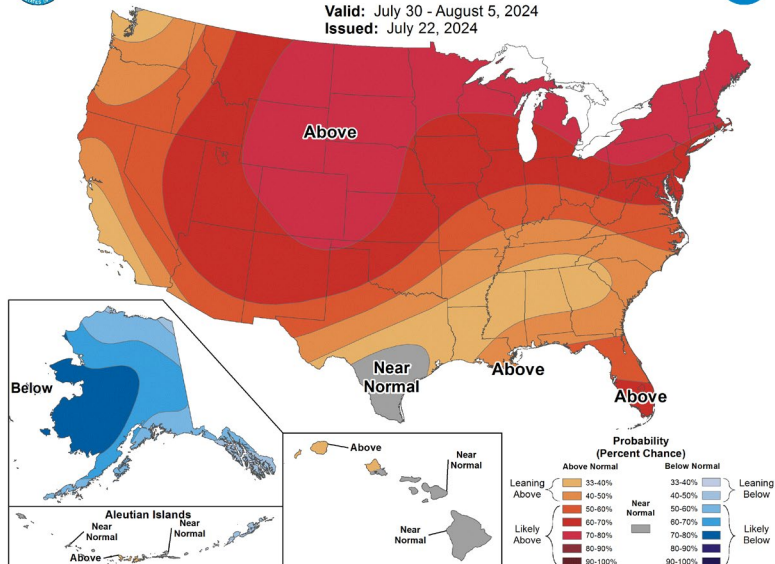


- Onset of La Niña has shifted later (Aug-Oct) compared to last WSAC
- About 1 in 5 chance that La Niña won't show up at all
- Seasonal forecast model output suggests Sep-Dec may be warmer and drier than indicated a month or so ago



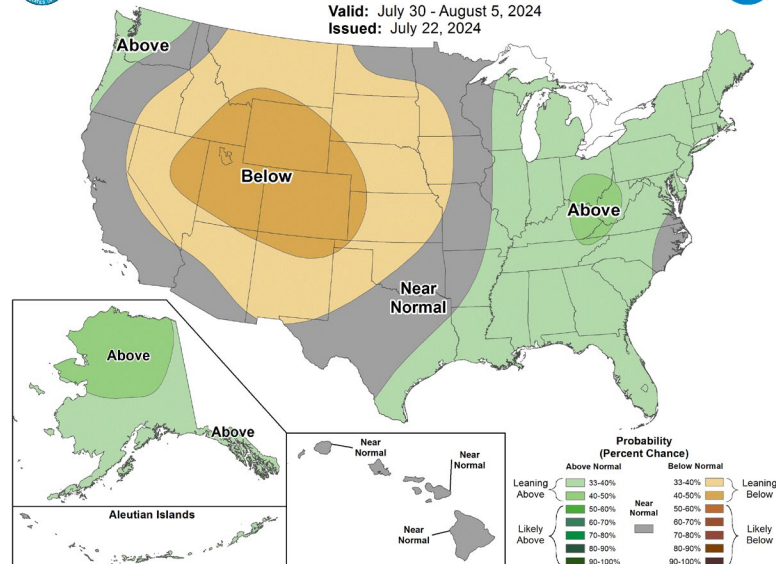
8-14 Day Temperature Outlook

Valid: July 30 - August 5, 2024
Issued: July 22, 2024



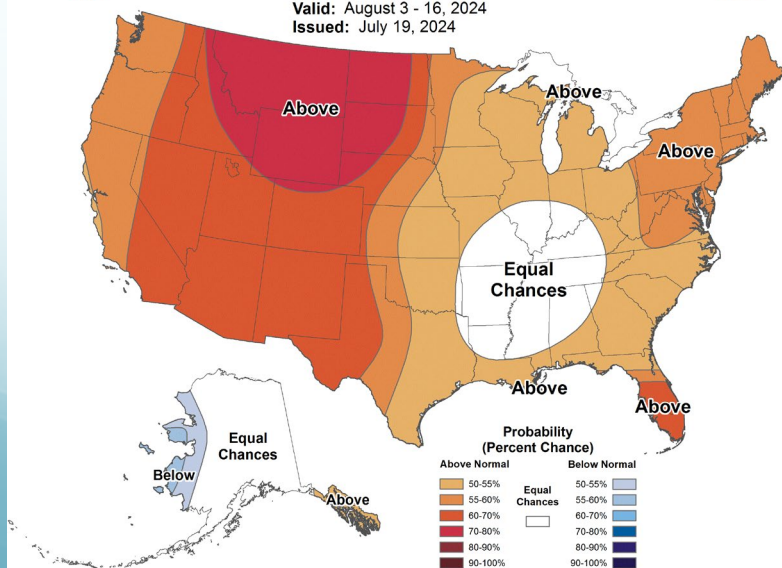
8-14 Day Precipitation Outlook

Valid: July 30 - August 5, 2024
Issued: July 22, 2024



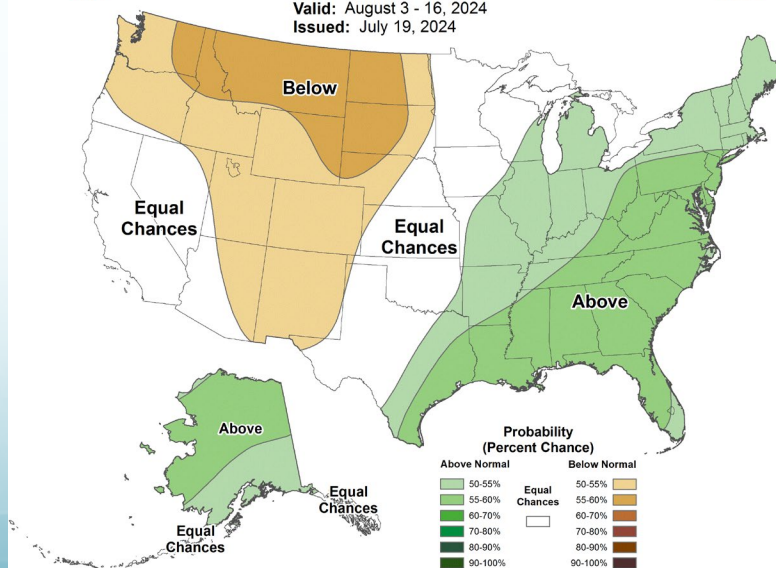
Weeks 3-4 Temperature Outlook

Valid: August 3 - 16, 2024
Issued: July 19, 2024



Weeks 3-4 Precipitation Outlook

Valid: August 3 - 16, 2024
Issued: July 19, 2024





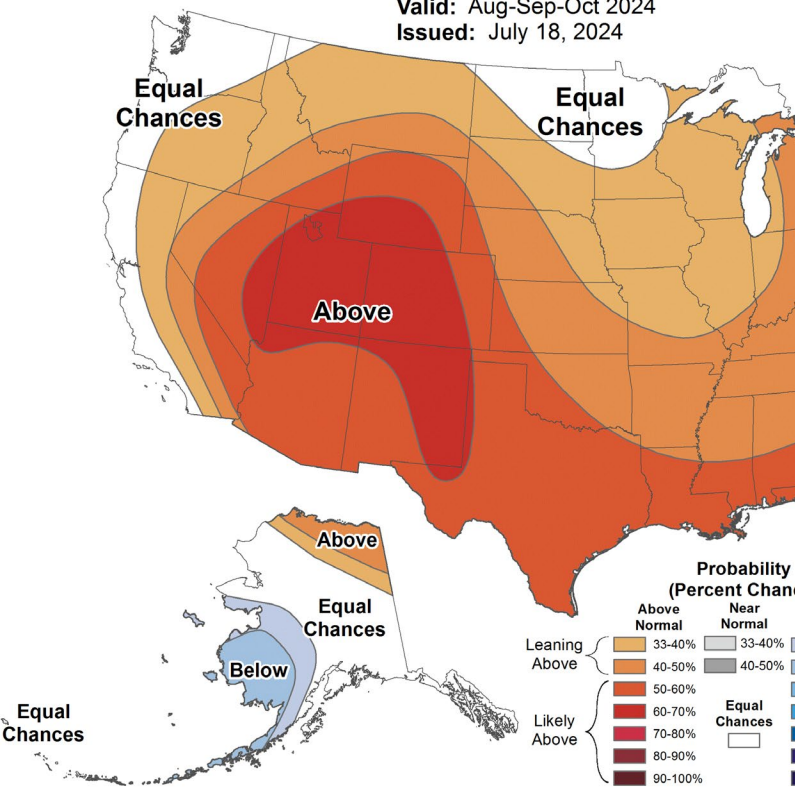
Seasonal Temperature Outlook

Valid: Aug-Sep-Oct 2024

Issued: July 18, 2024



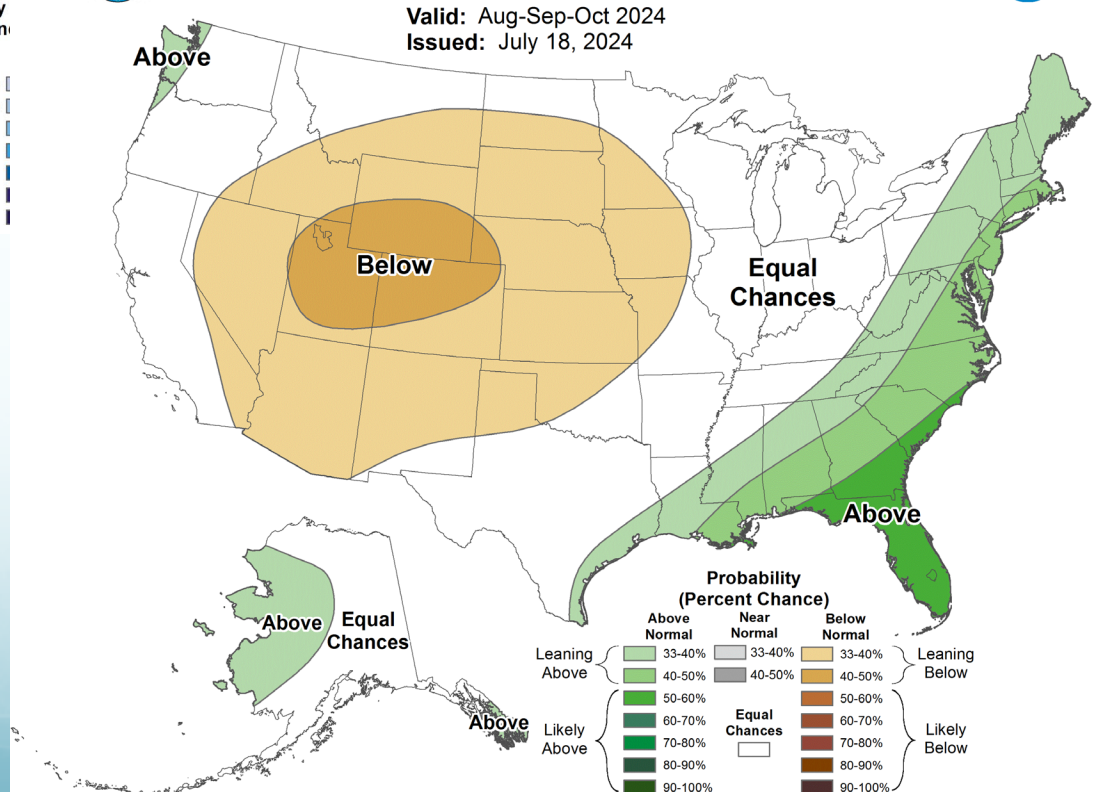
NOAA/CPC Outlooks for Aug-Sep-Oct



Seasonal Precipitation Outlook

Valid: Aug-Sep-Oct 2024

Issued: July 18, 2024



Summary

- The water year through June is the 15th warmest and 50th driest on record (90% of normal)
- May and June were relatively cool, but we've experienced a long stretch of hot and dry weather since July
 - Drier than normal conditions consistent east of the Cascade crest over the last 90 days
- The remainder of summer does not appear to be as anomalous as the last few weeks as near-normal conditions are expected for the Aug-Oct period
- La Niña still likely but the chances of development have shifted to late summer/early fall and the strength does not appear to be as strong



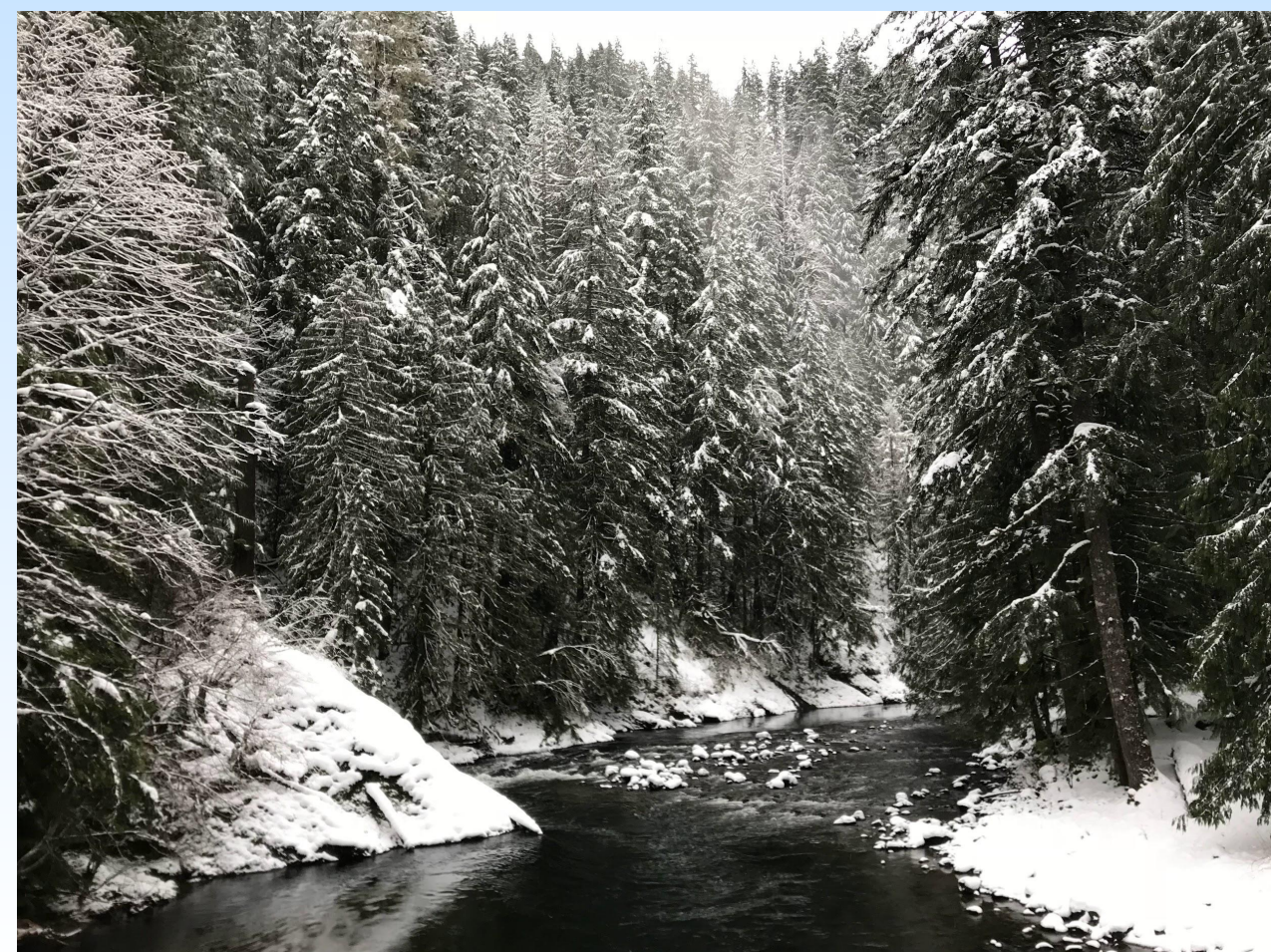
NWS

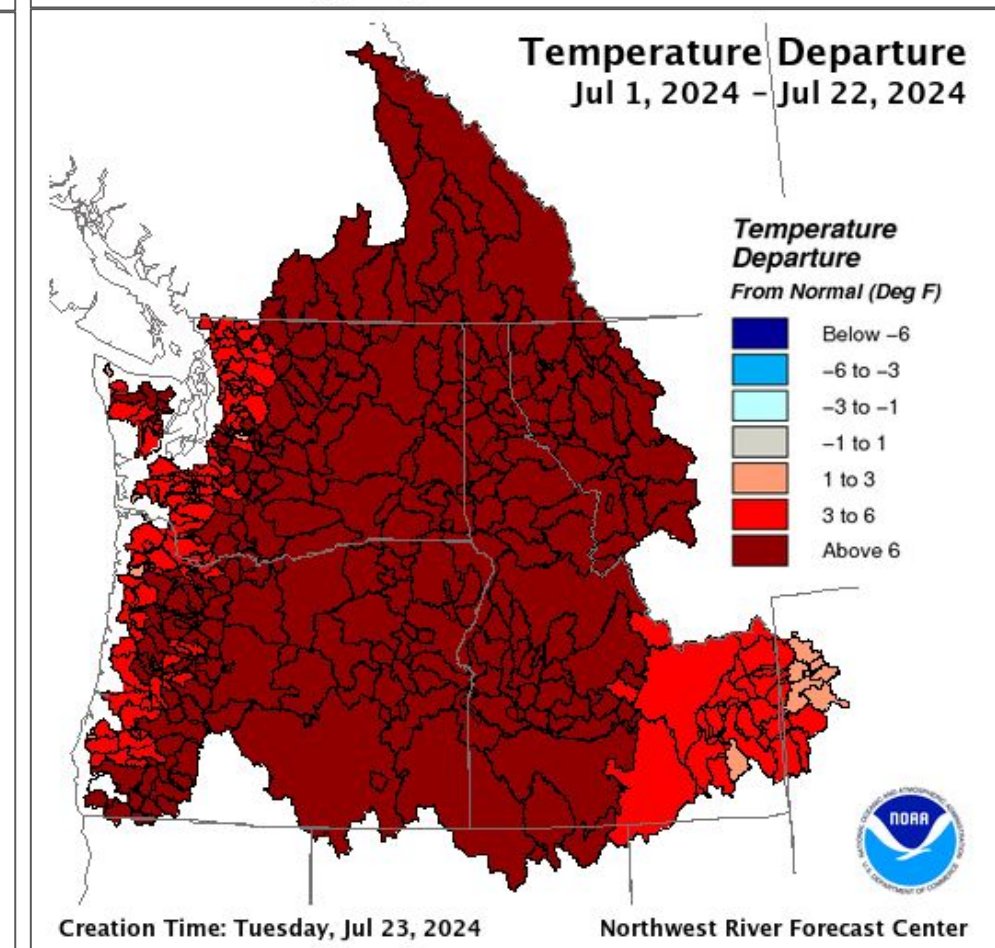
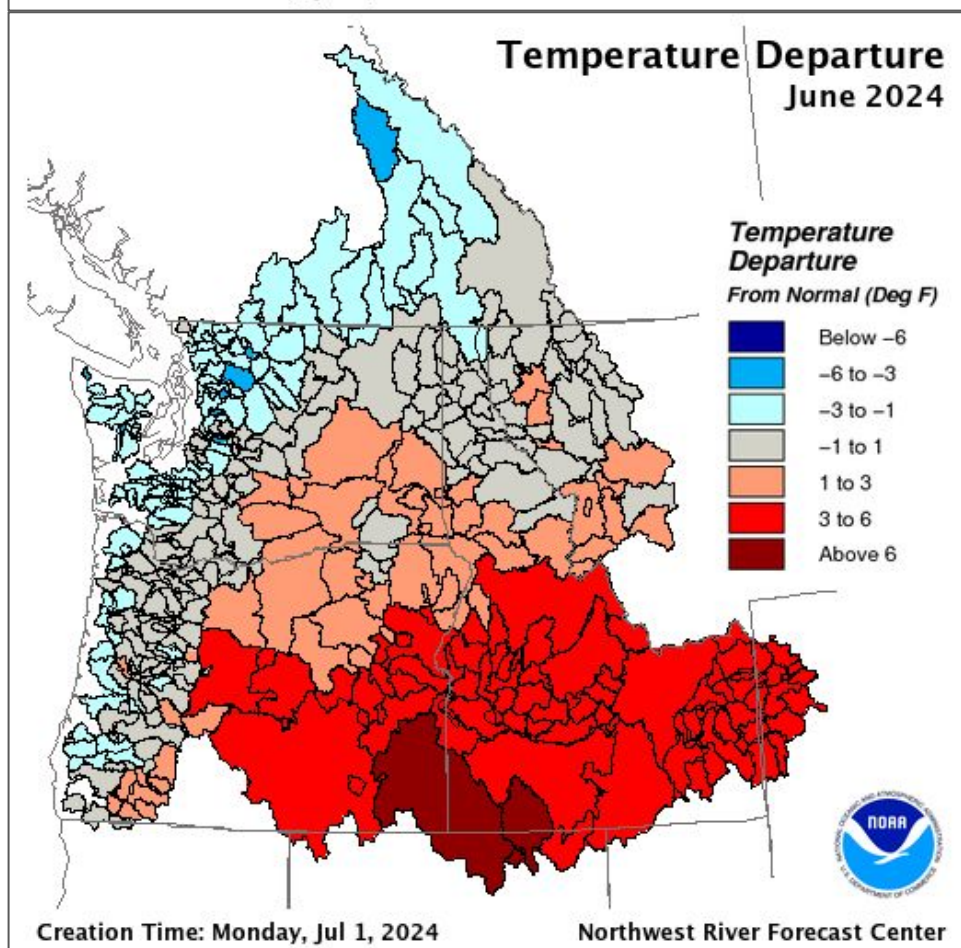
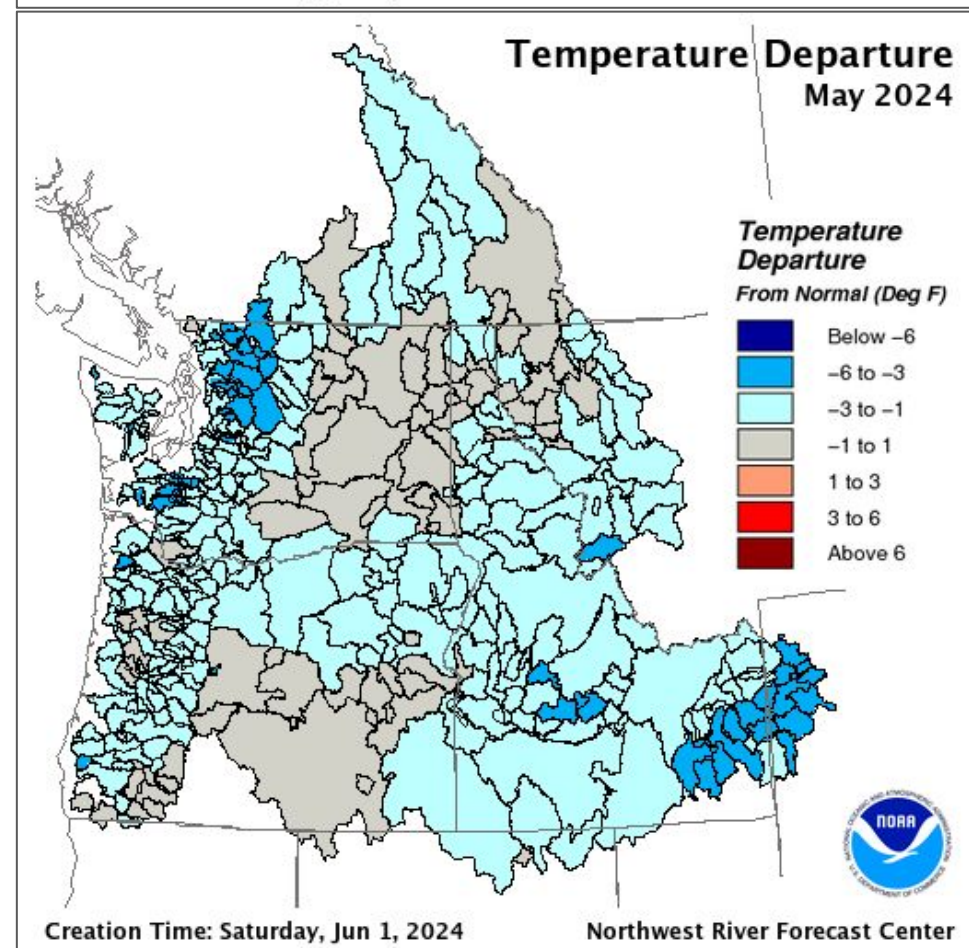
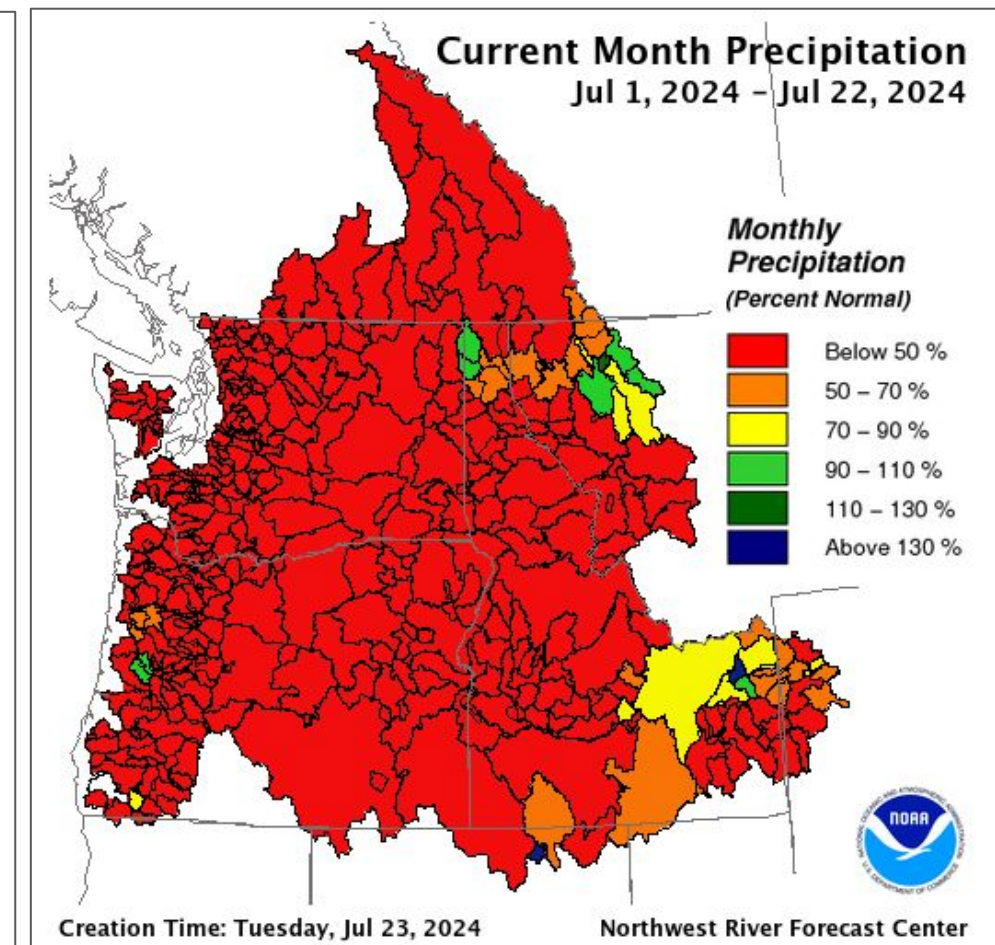
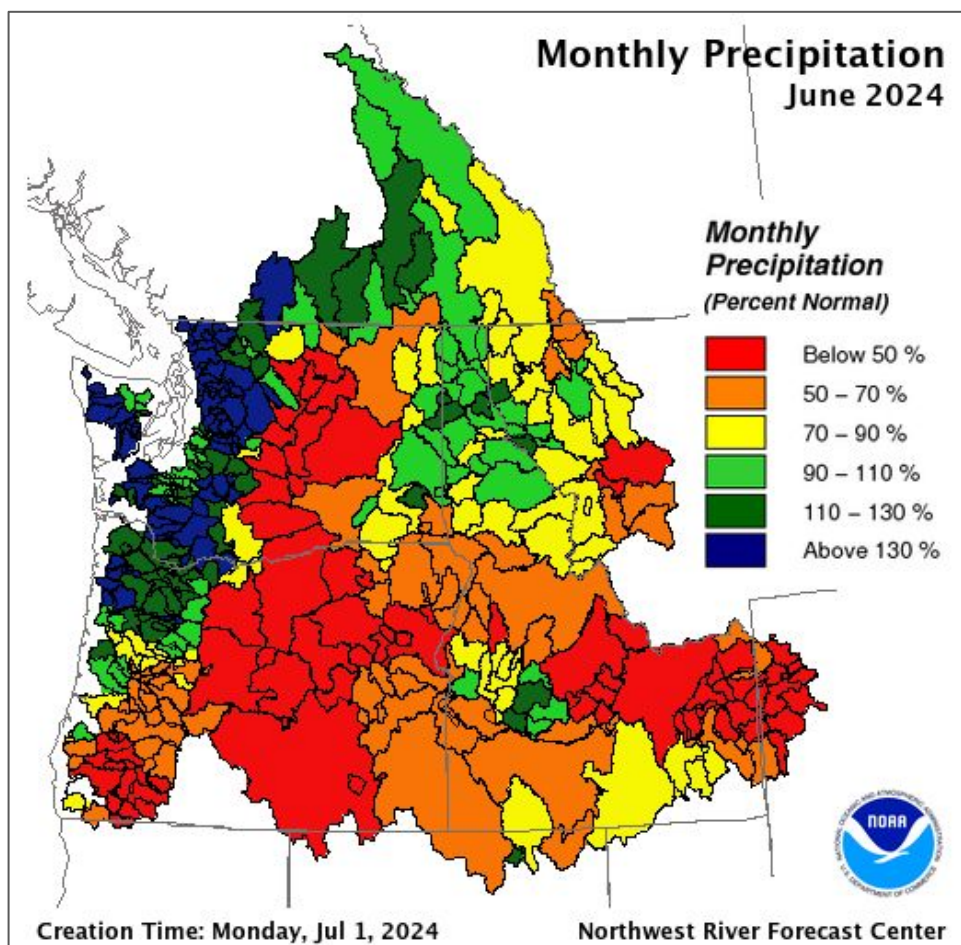
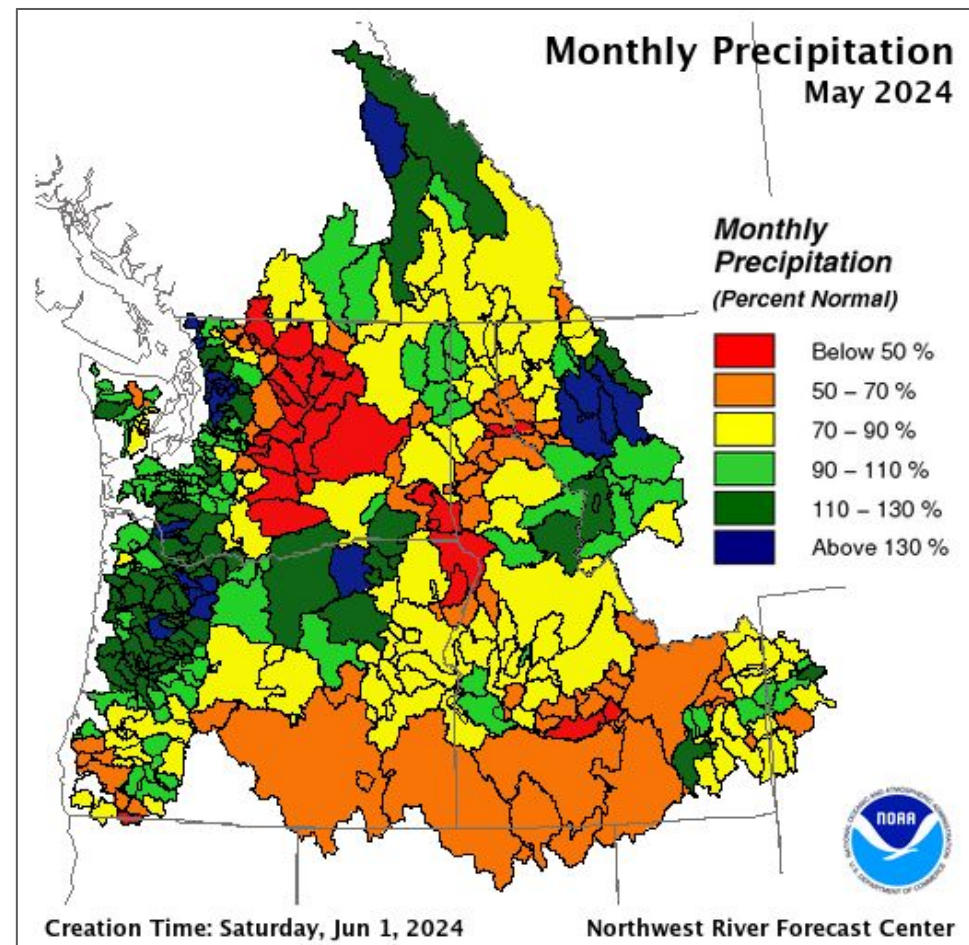
July 2024 Washington Water Supply

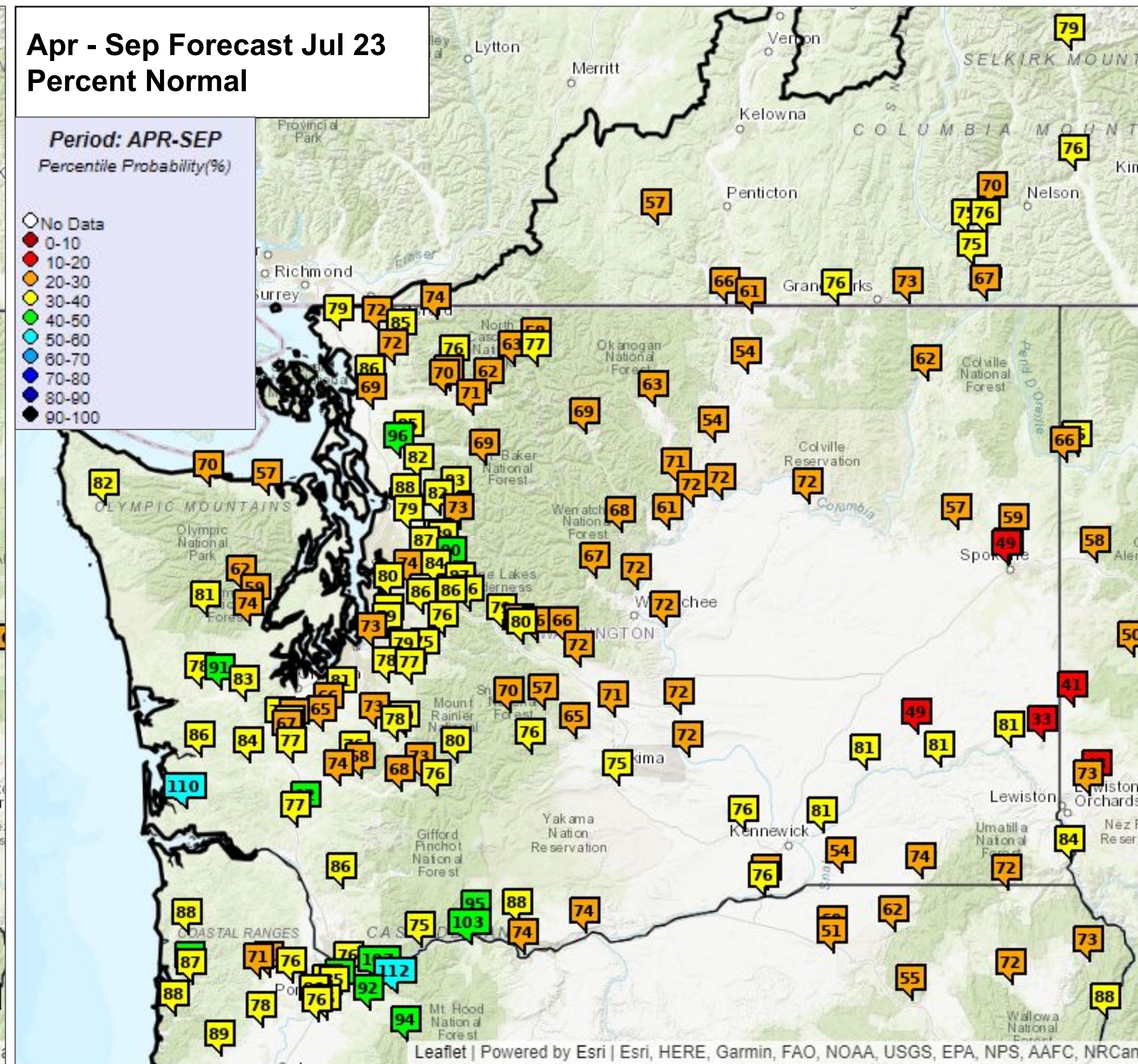
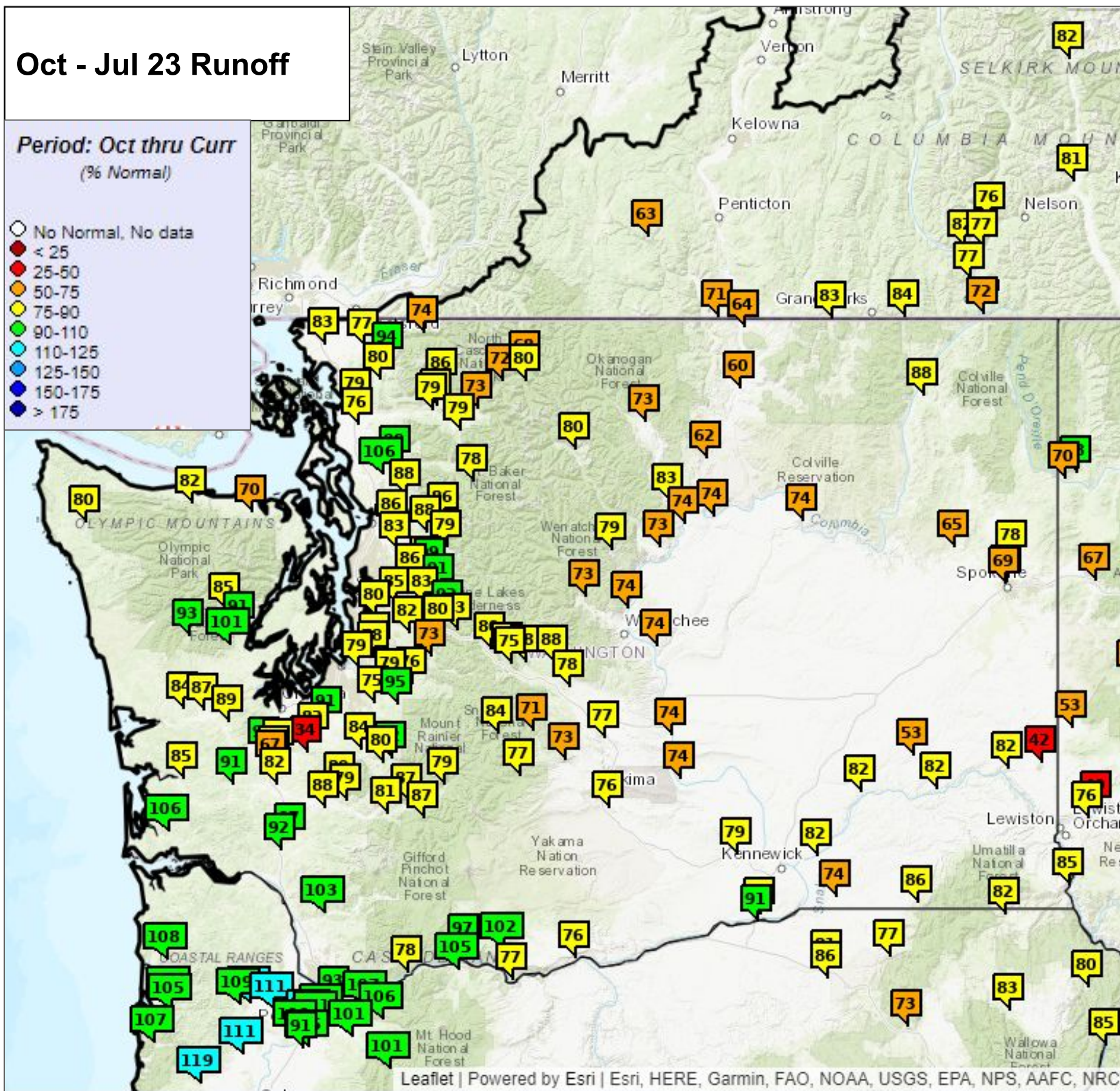
Amy Burke, Senior Hydrologist - NWRFC - NWRFC.watersupply@noaa.gov

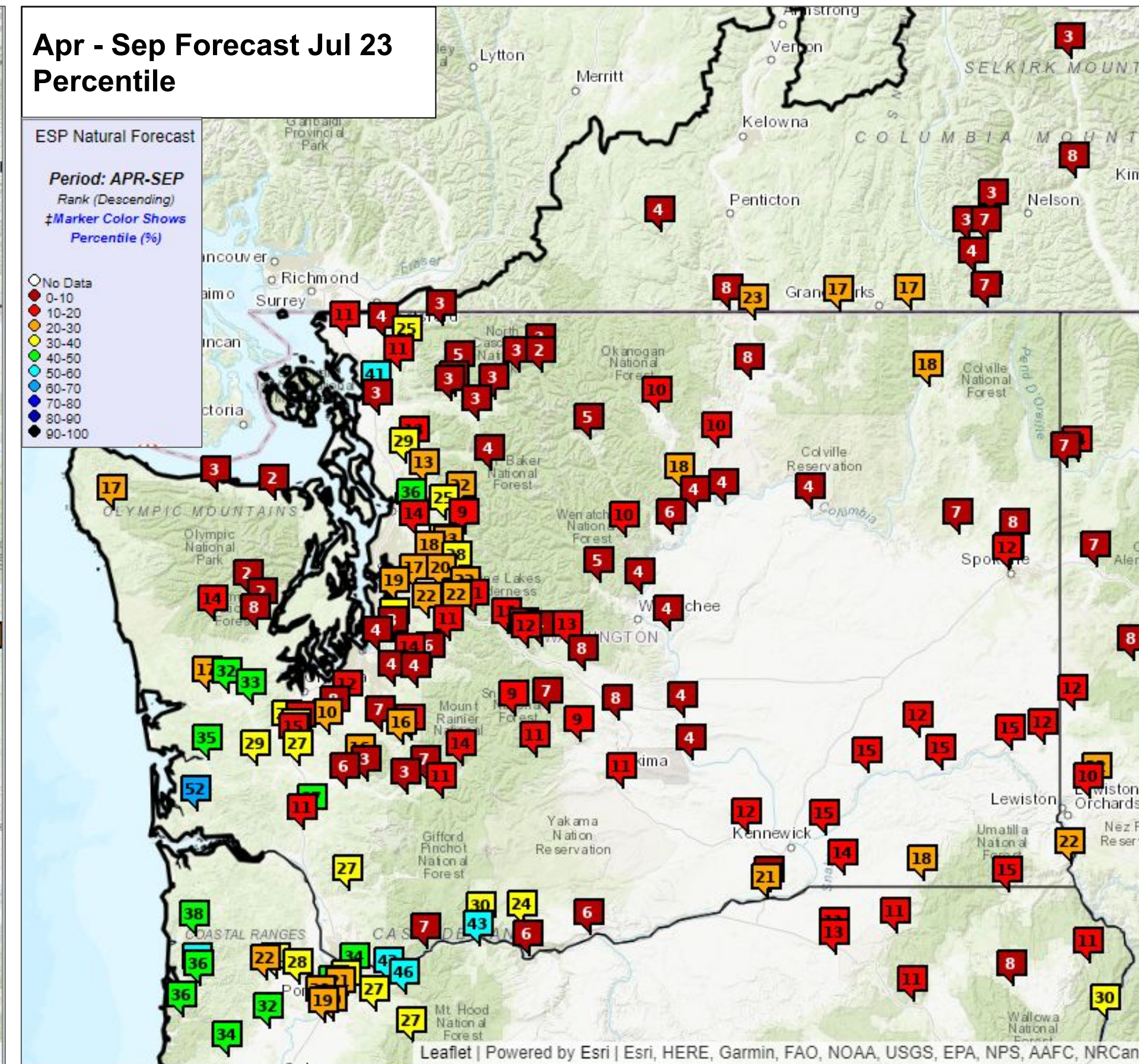
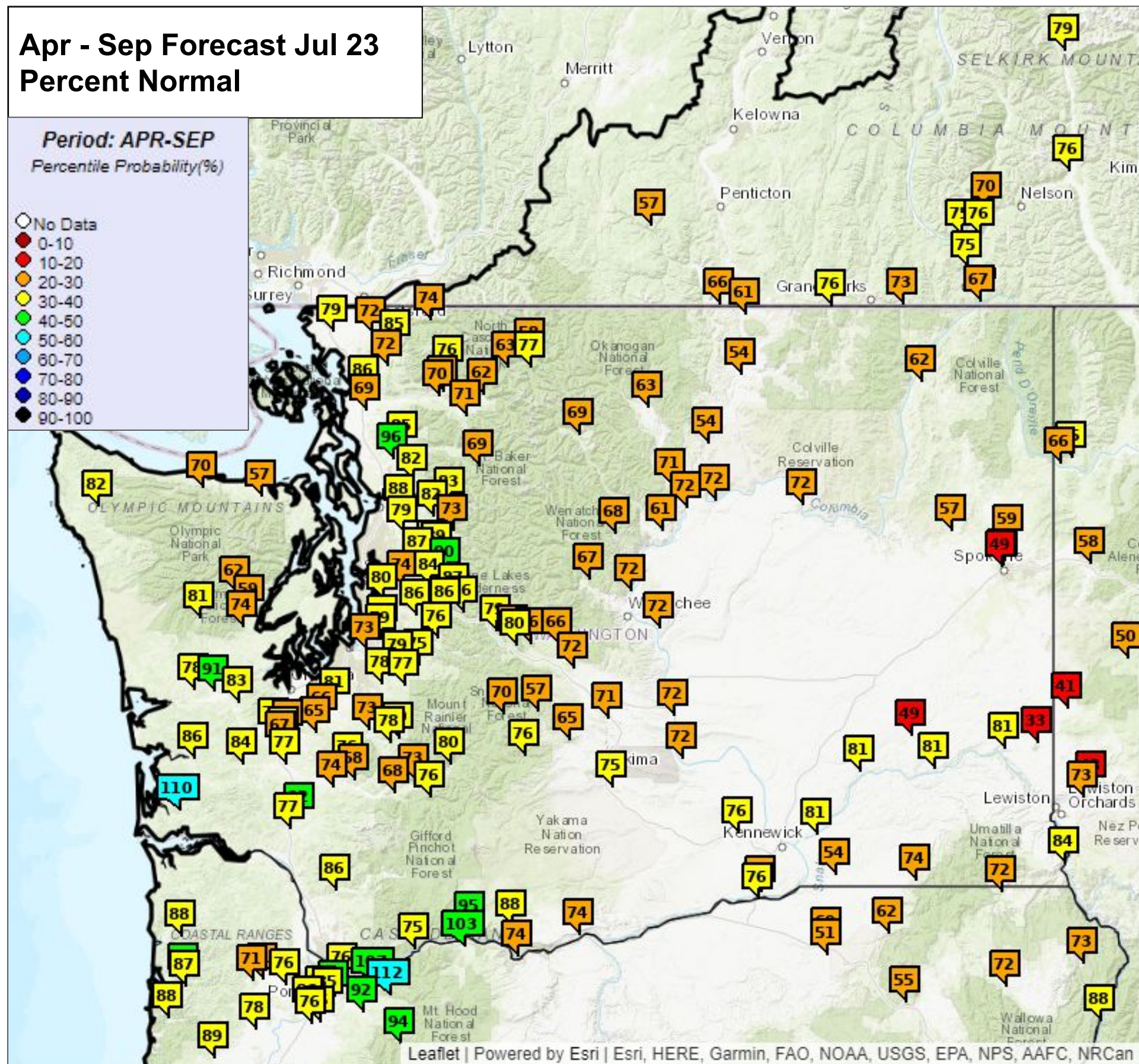
Brent Bower, Service Hydrologist - NWS Seattle

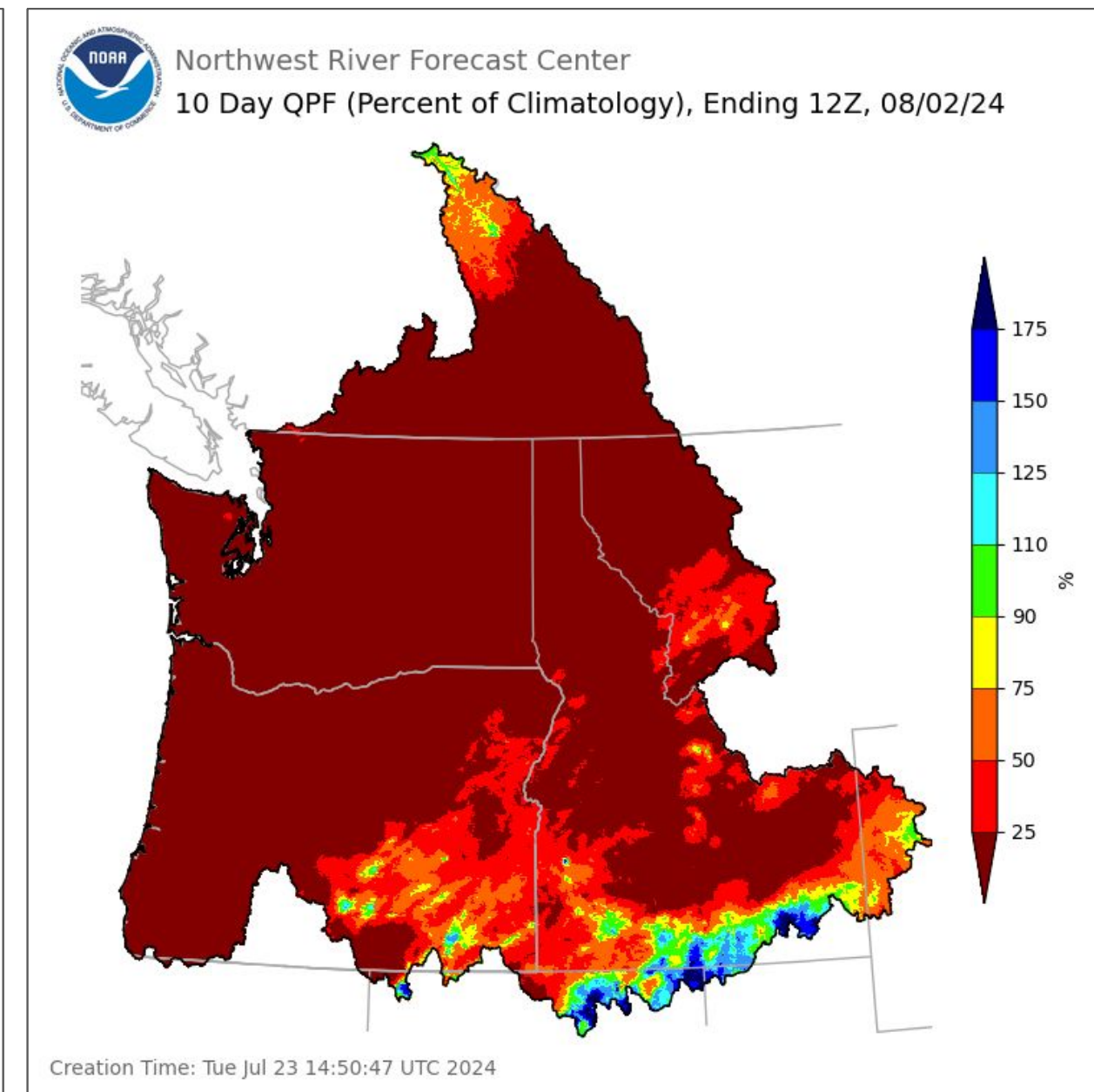
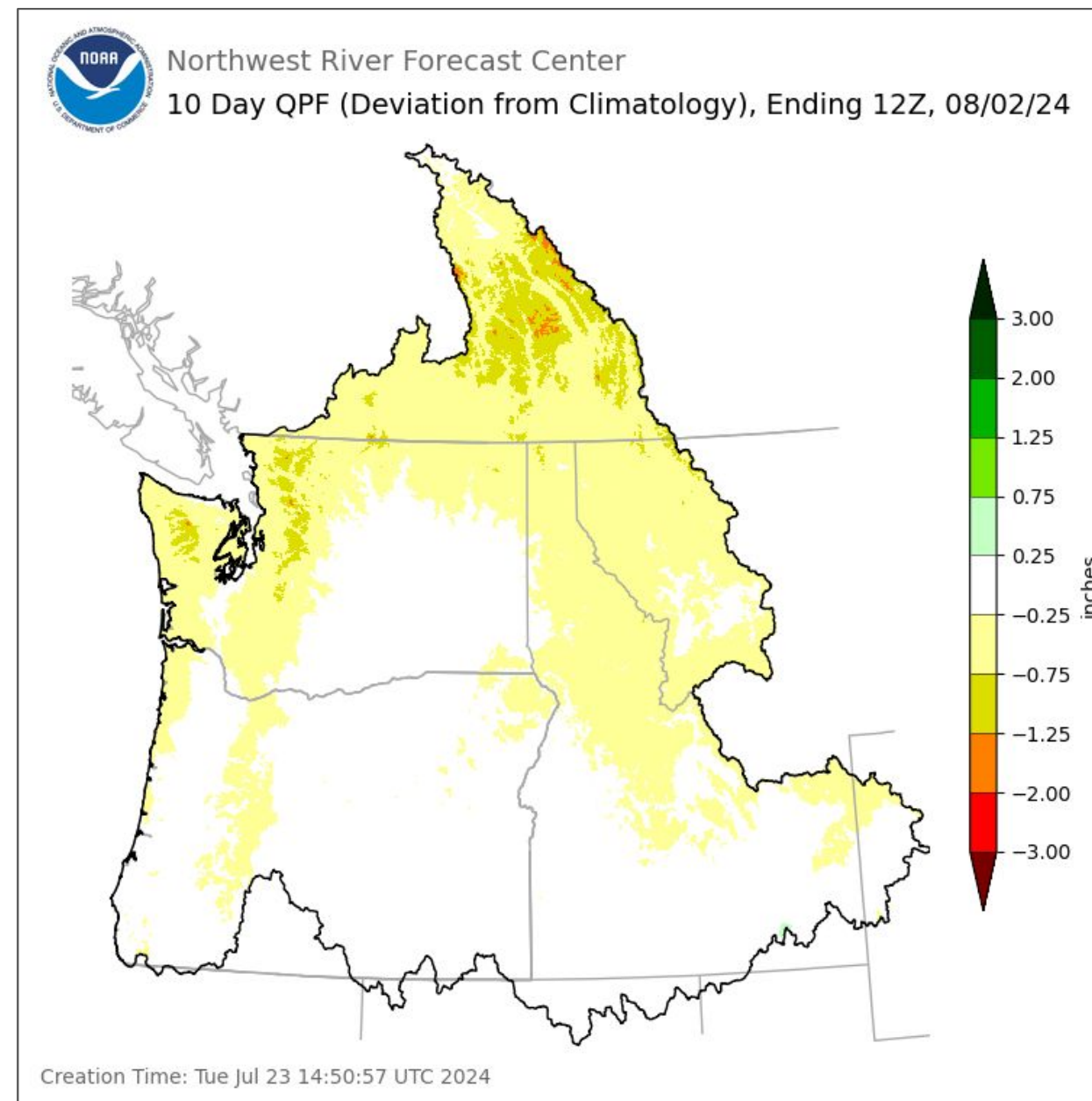
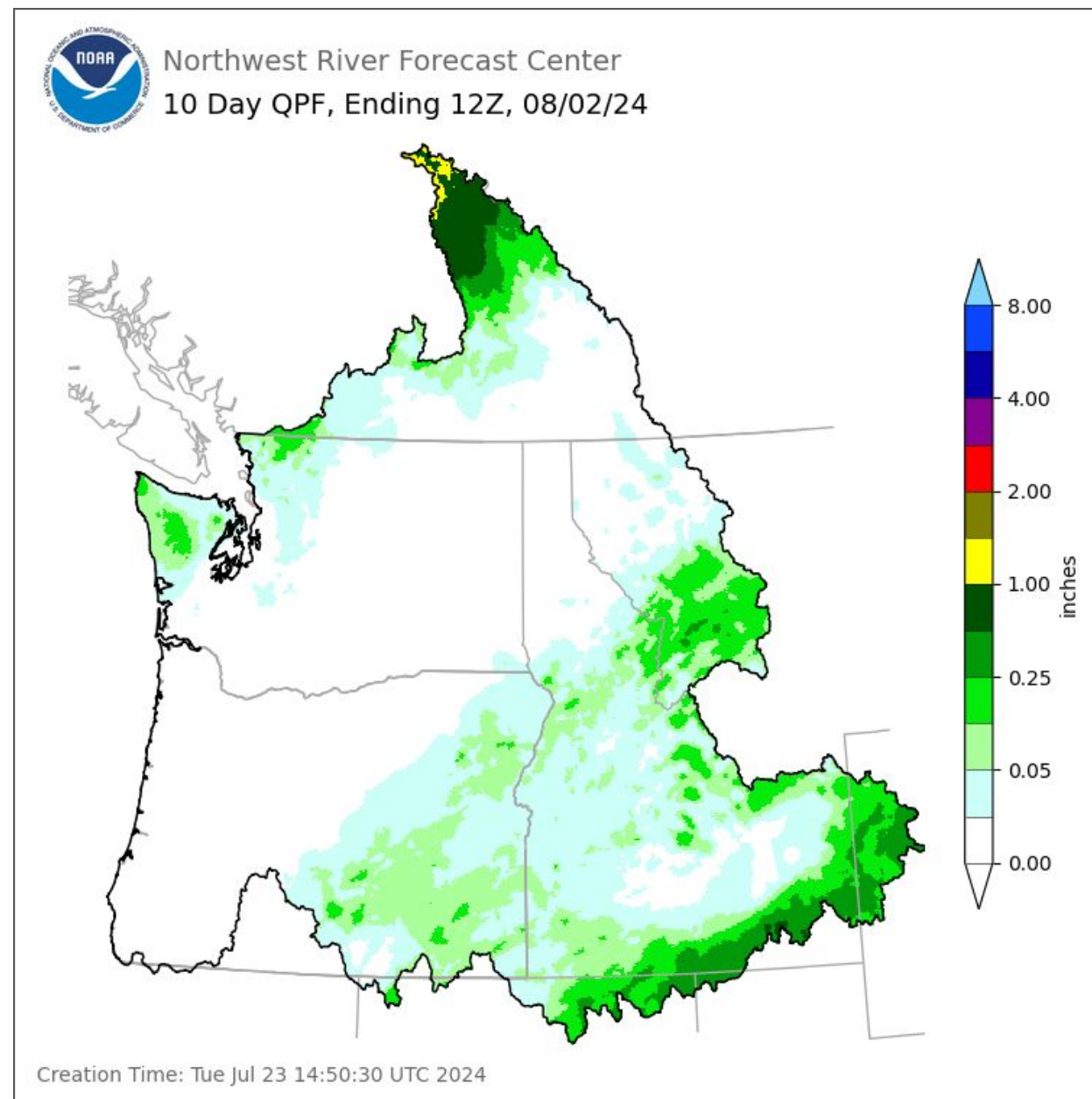
Robin Fox, Service Hydrologist - NWS Spokane





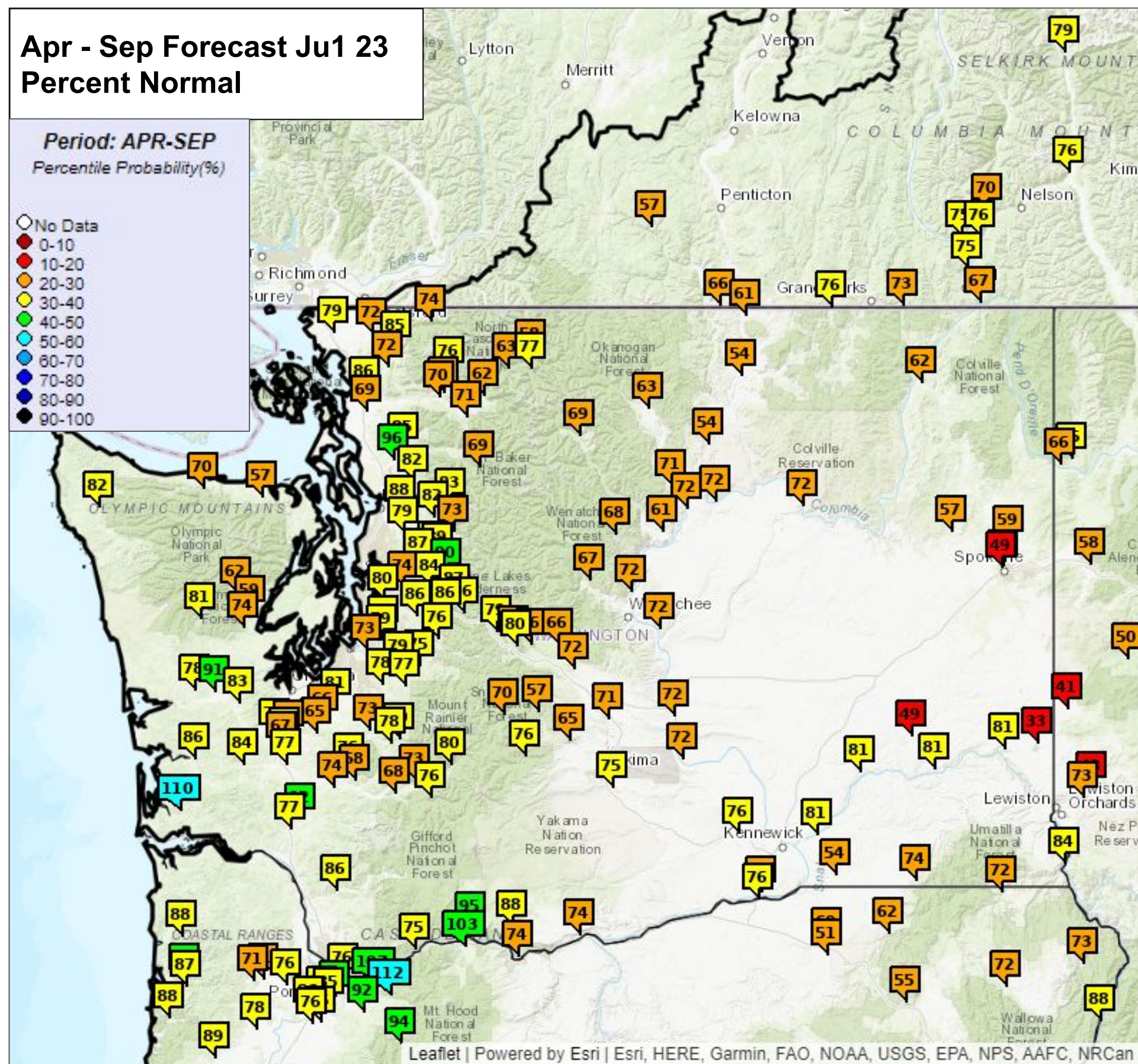






Quantitative Precipitation Forecast (QPF) Sources
 Days 1 - 2 NWS Weather Forecast Offices (WFO) in the US, WPC in BC
 Days 3 - 7 NWS Weather Prediction Center (WPC)
 Days 8 - 10 NWS National Blend of Models (NBM)

Forecast Point	% Normal Apr - Sep Vol	<u>Δ Since May 21</u>
Skagit nr Mt Vernon	69	-2
Dungeness nr Sequim	57	-8
Chehalis at Porter	83	-3
Okanogan at Malott	54	4
Methow nr Pateros	71	2
Yakima at Parker	75	4
Walla Walla nr Touchet	54	2



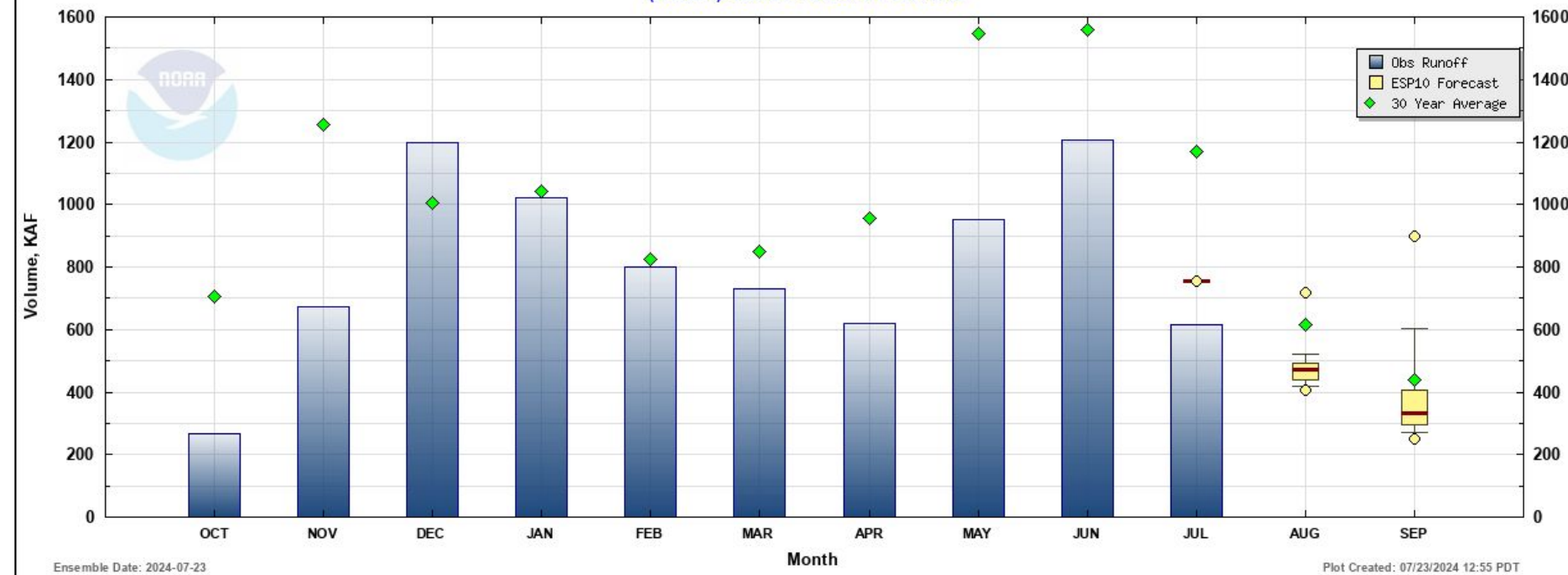


Natural Water Supply Forecasts

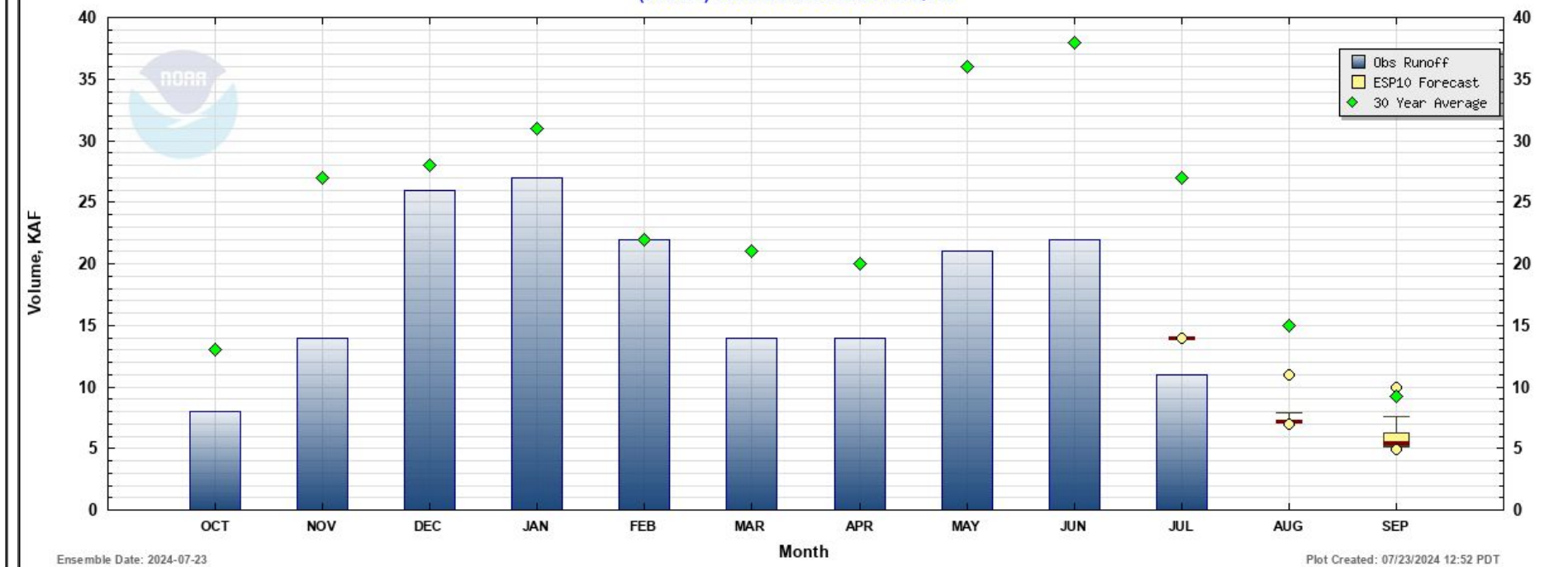
NWRFC

July, 2024

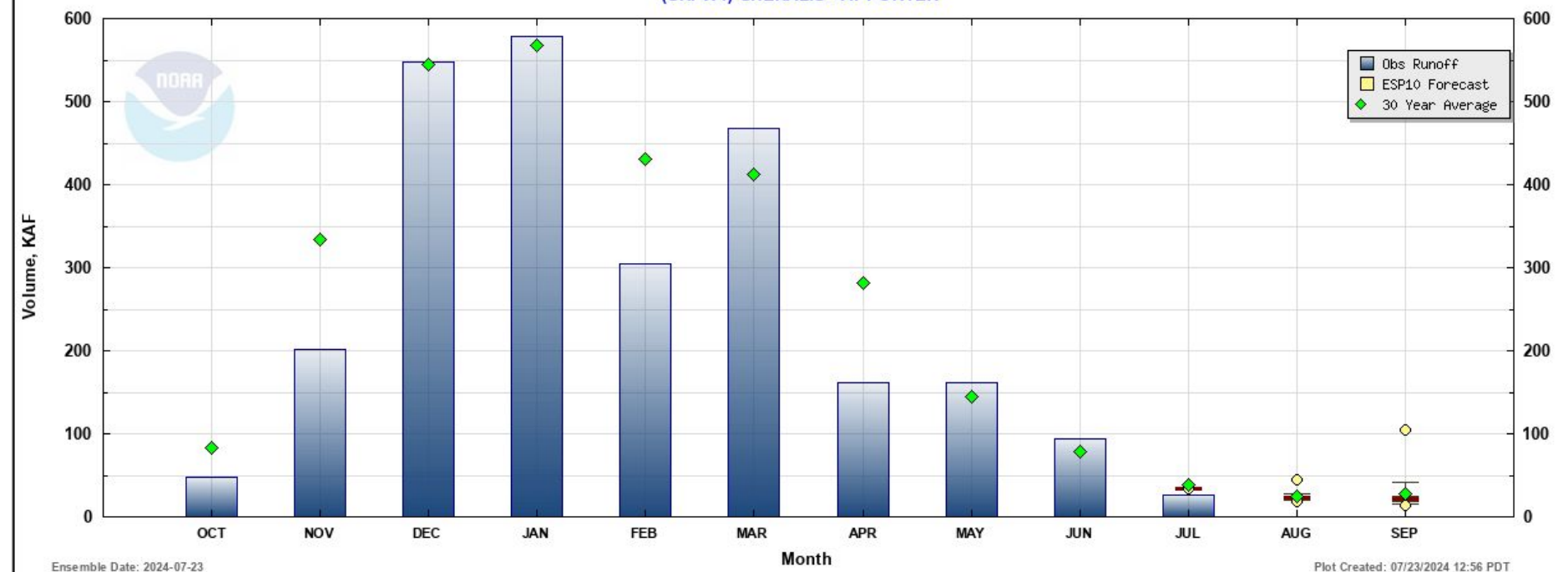
Natural Volume Monthly Forecasts (ESP10) for Water Year 2024
(MVEW1) SKAGIT - NEAR MT VERNON



Natural Volume Monthly Forecasts (ESP10) for Water Year 2024
(DRSW1) DUNGENESS - NEAR SEQUIM



Natural Volume Monthly Forecasts (ESP10) for Water Year 2024
(CRPW1) CHEHALIS - AT PORTER



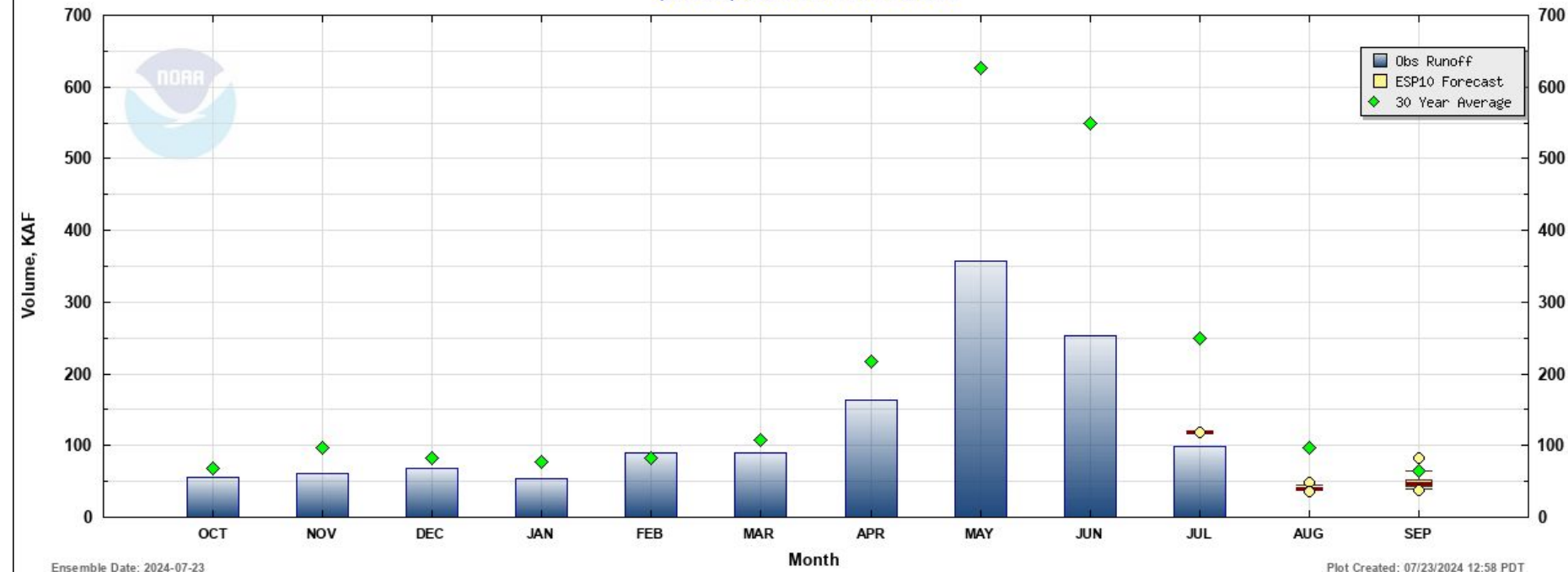


Natural Water Supply Forecasts

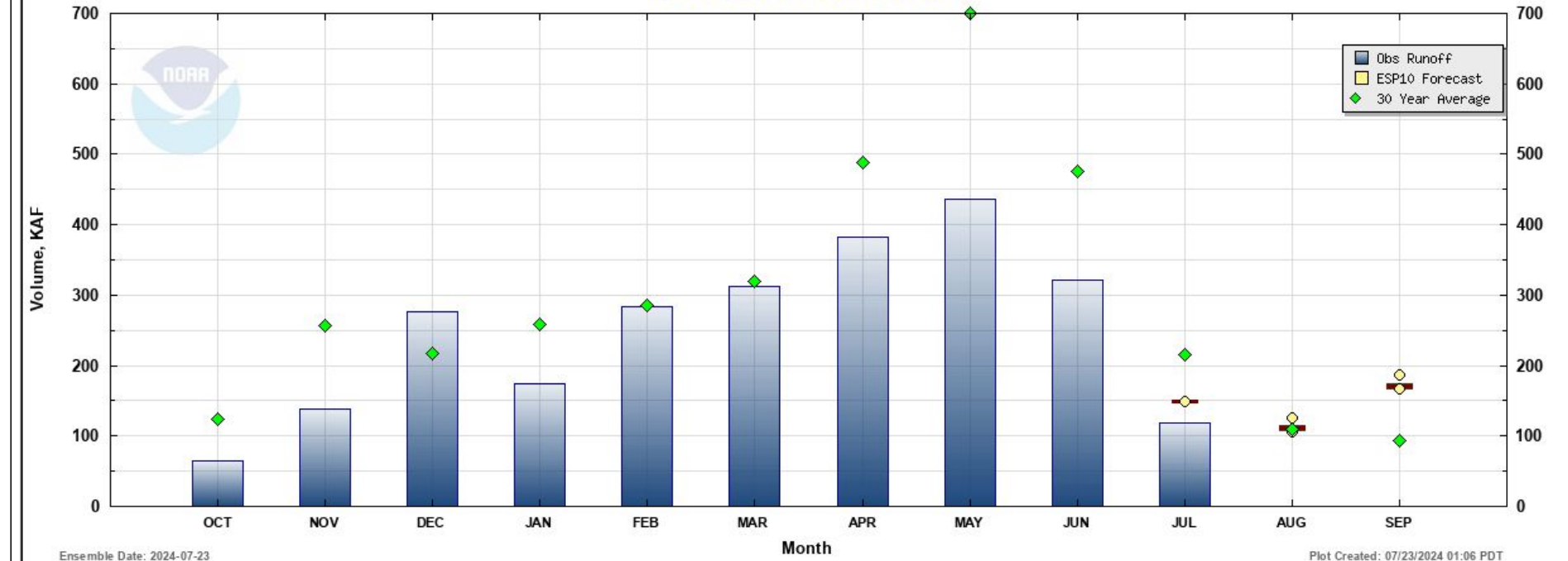
NWRFC

July, 2024

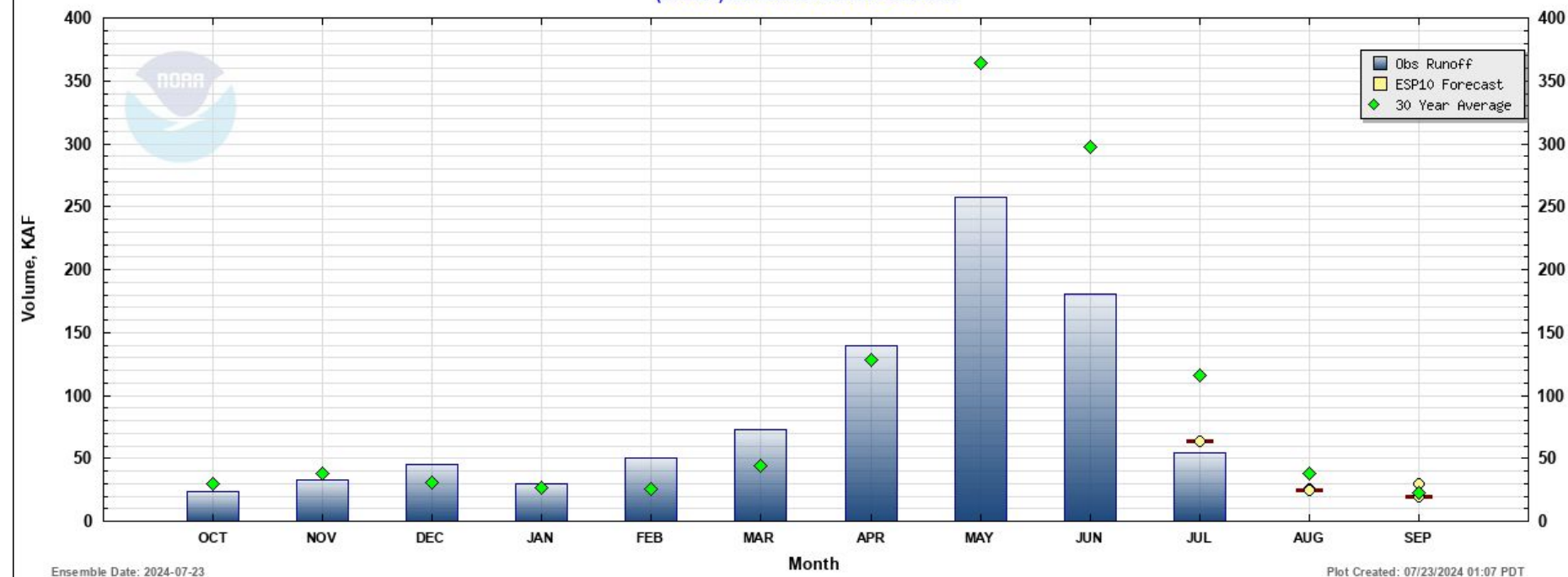
Natural Volume Monthly Forecasts (ESP10) for Water Year 2024
(OKMW1) OKANOGAN - AT MALOTT



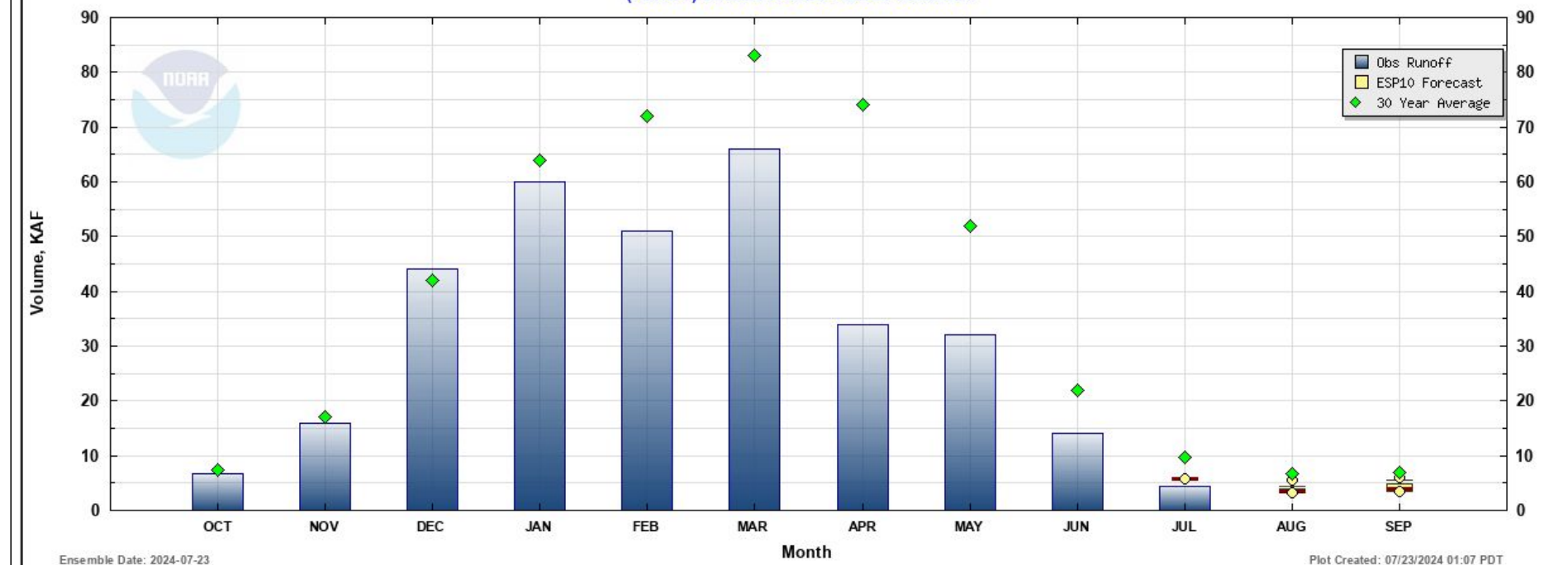
Natural Volume Monthly Forecasts (ESP10) for Water Year 2024
(PARW1) YAKIMA - NEAR PARKER



Natural Volume Monthly Forecasts (ESP10) for Water Year 2024
(PATW1) METHOW - NEAR PATEROS



Natural Volume Monthly Forecasts (ESP10) for Water Year 2024
(TCHW1) WALLA WALLA - NEAR TOUCHET



- Runoff and water supply forecasts remain lower than normal but have not changed much since last month
- Apr - Sep Water Supply Forecasts are near record low in many places

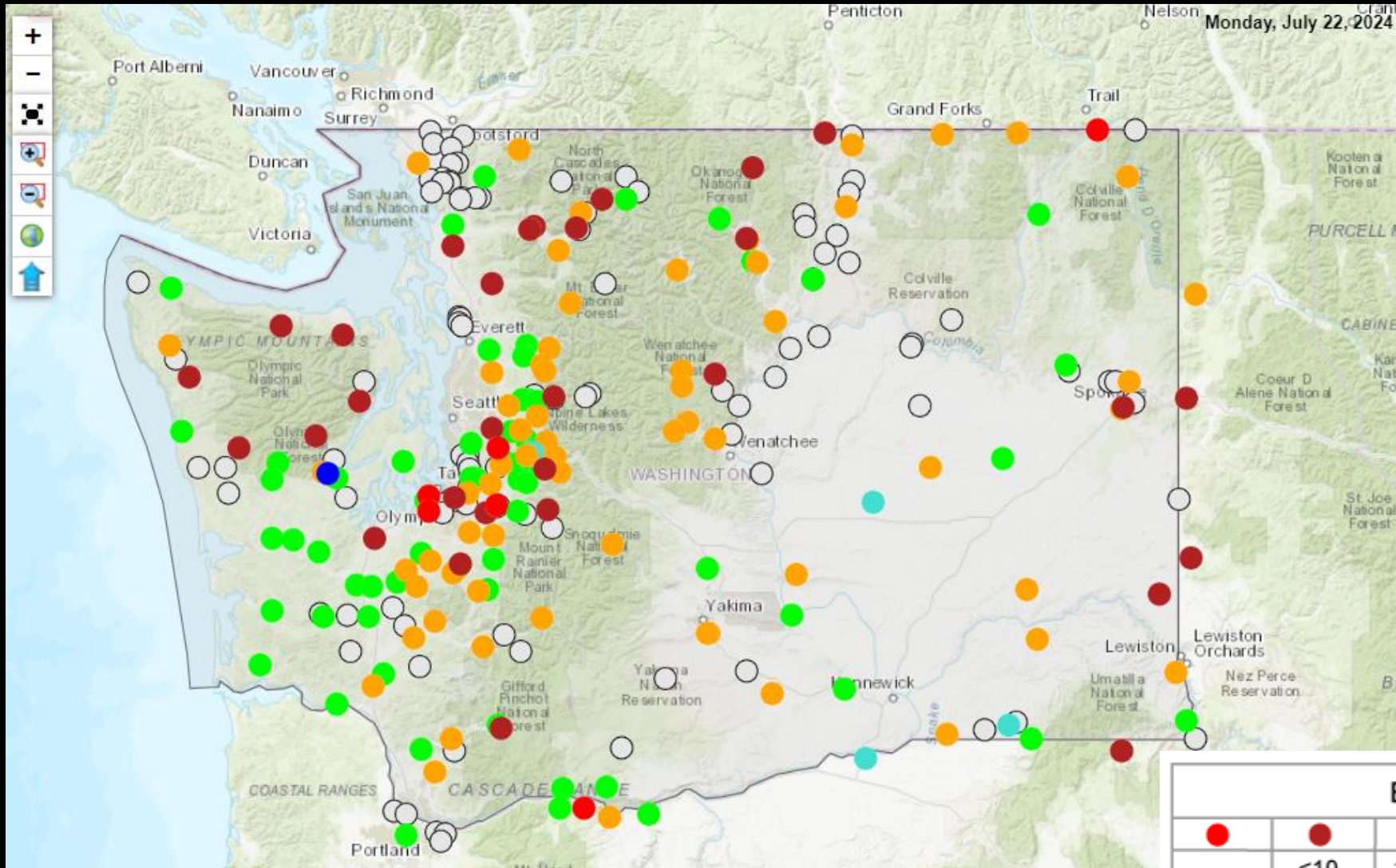
Streamflow & Groundwater Conditions in Washington State as of 22 July 2024

Presented on 24 July 2024
to the Washington Water Supply Availability Committee
by Nicholas Sutfin, nsutfin@usgs.gov
USGS Washington Water Science Center

This information is preliminary and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information.









7-day Average Streamflow

Conditions as of 22 July 2024



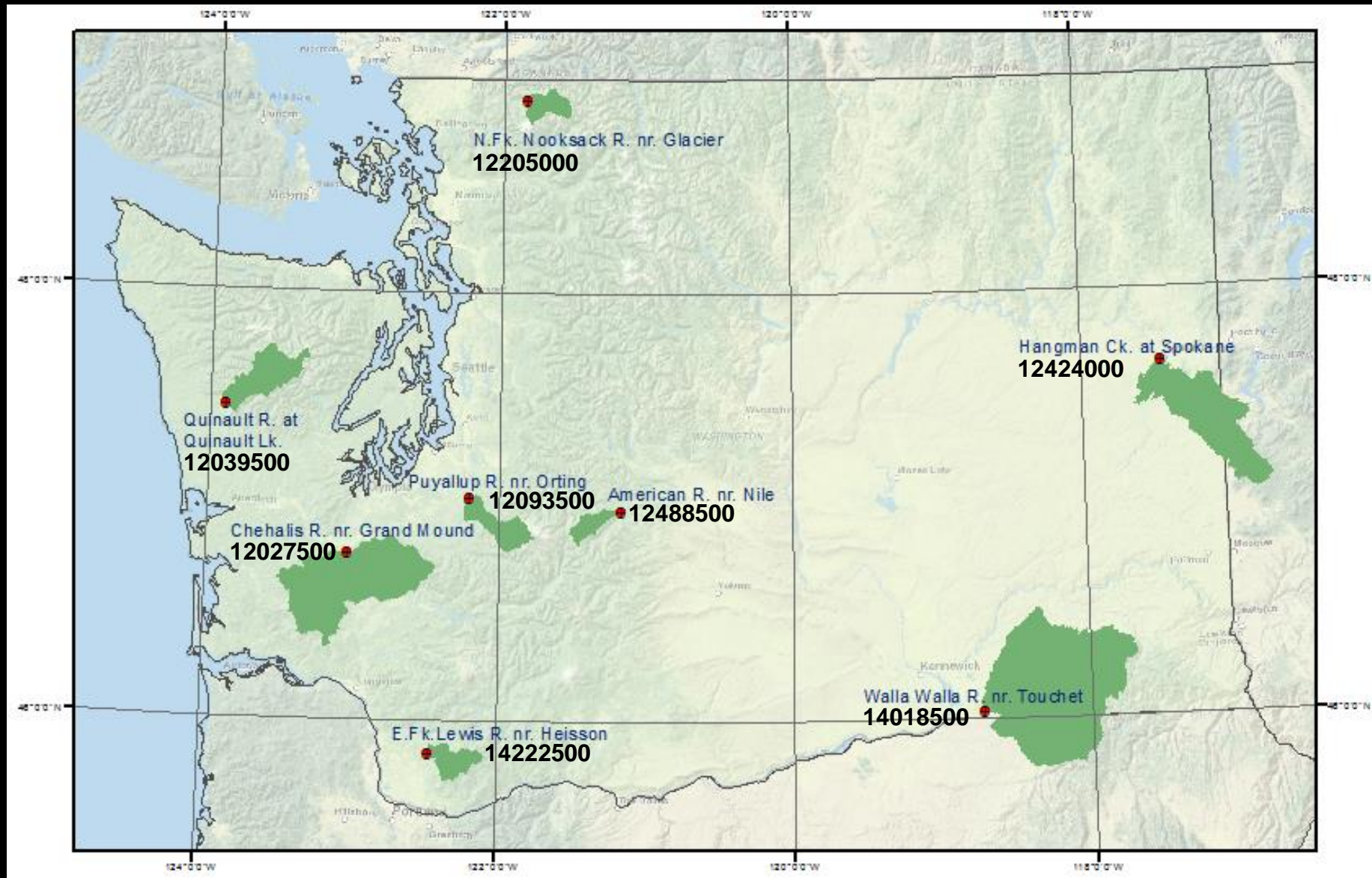
**Preliminary Information-
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Citation or Distribution.**

**WaterWatch is scheduled
to be discontinued in 2026**

Explanation - Percentile classes							
							
Record Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	Record High	Not-ranked

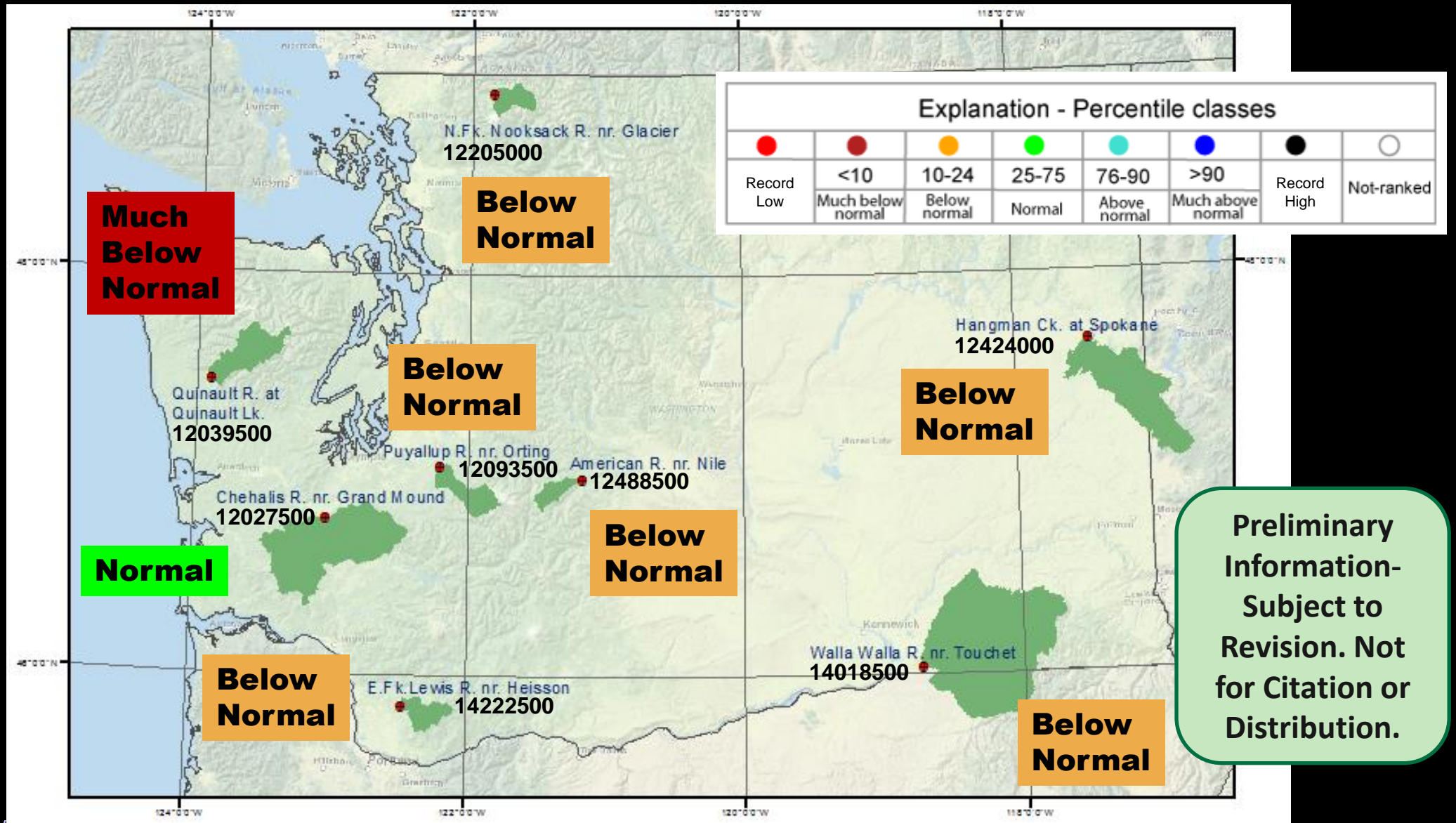
Index Gaging Stations

(Stations that measure natural or near-natural streamflow)



Index Gaging Stations

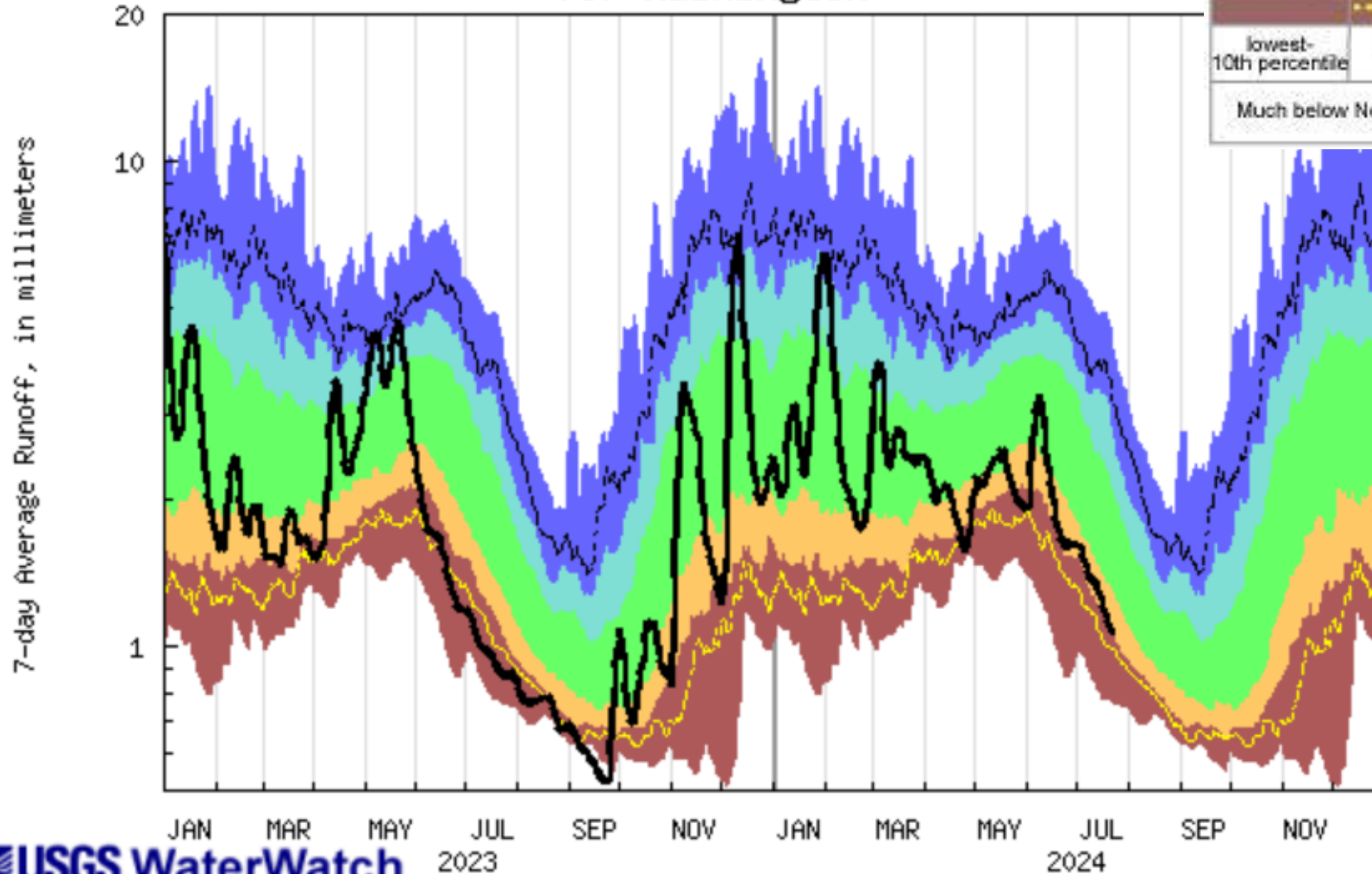
7-day average streamflow as of 22 July 2024



Area-Based Runoff Duration Hydrograph

7-day average streamflow as of 22 July 2024 is ~below normal

Duration hydrograph of 7-day average runoff for Washington



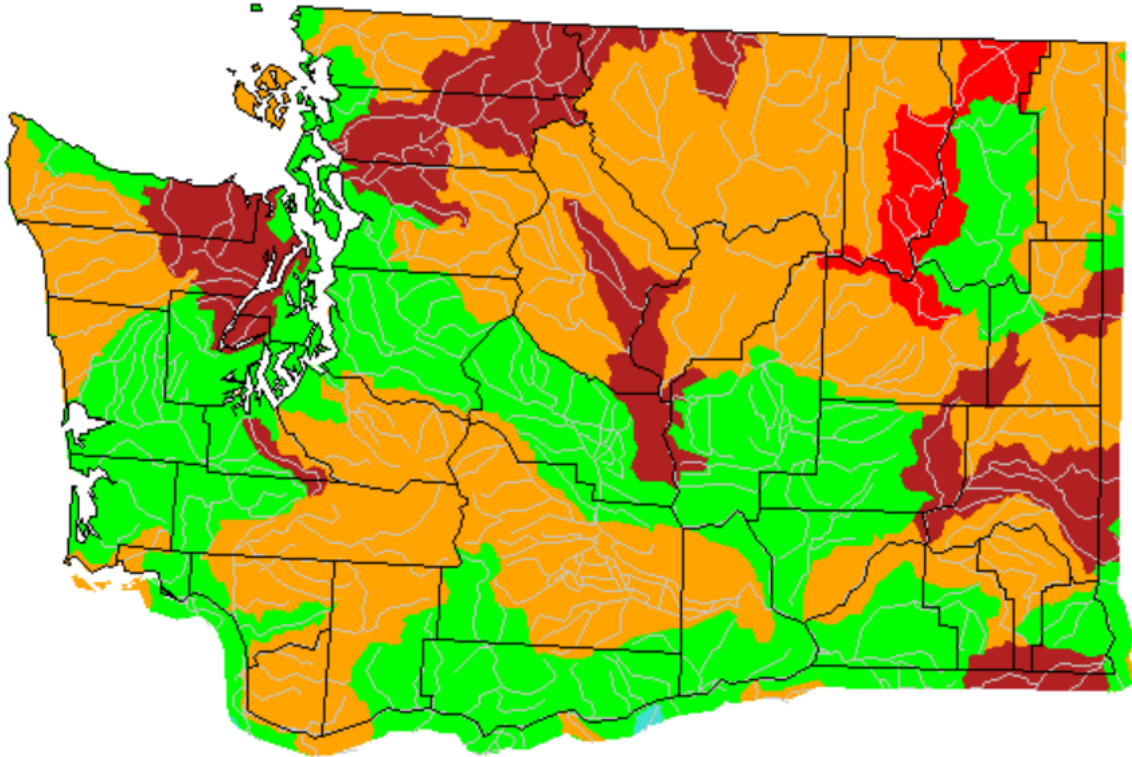
Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile-highest
Much below Normal	Below normal	Normal	Above normal	Much above normal		Flow

Preliminary Information-
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Citation or Distribution.

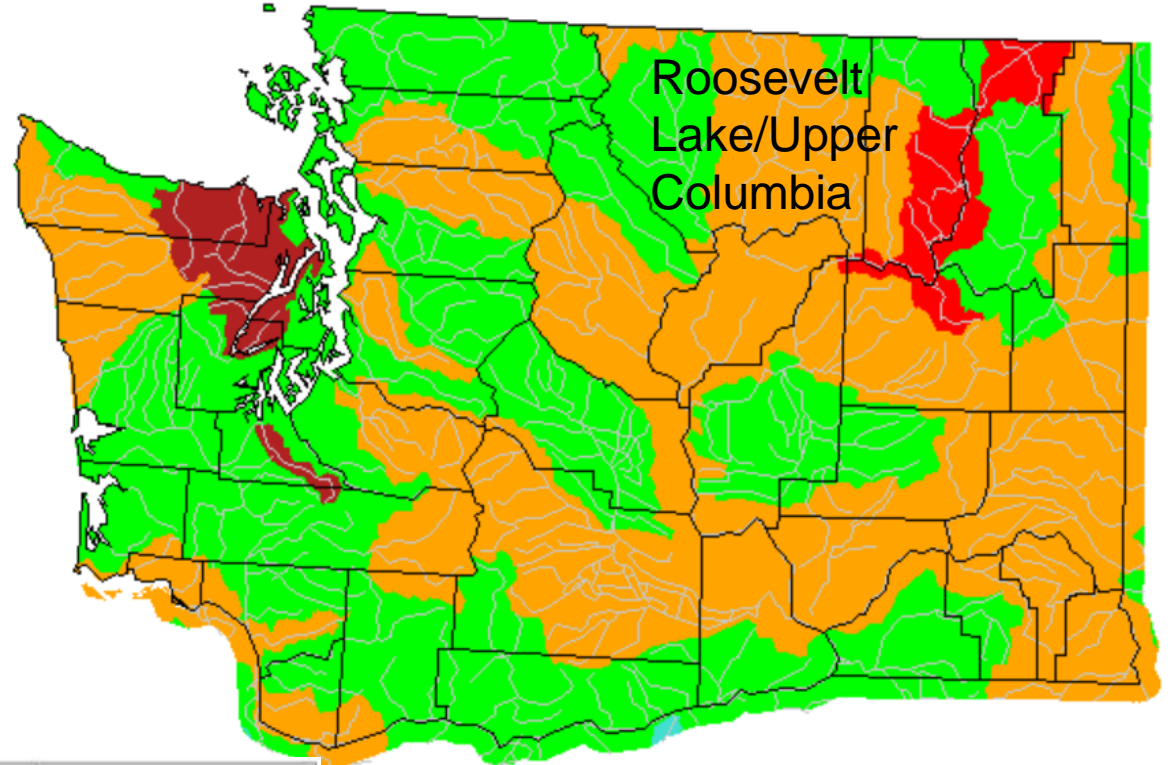
For some streams, flow
statistics may have been
computed from mixed
regulated
and unregulated flows; this
can affect depictions of flow
conditions.

Average streamflow compared to historical streamflow

7-day average as of 22 July 2024



28-day average as of 22 July 2024



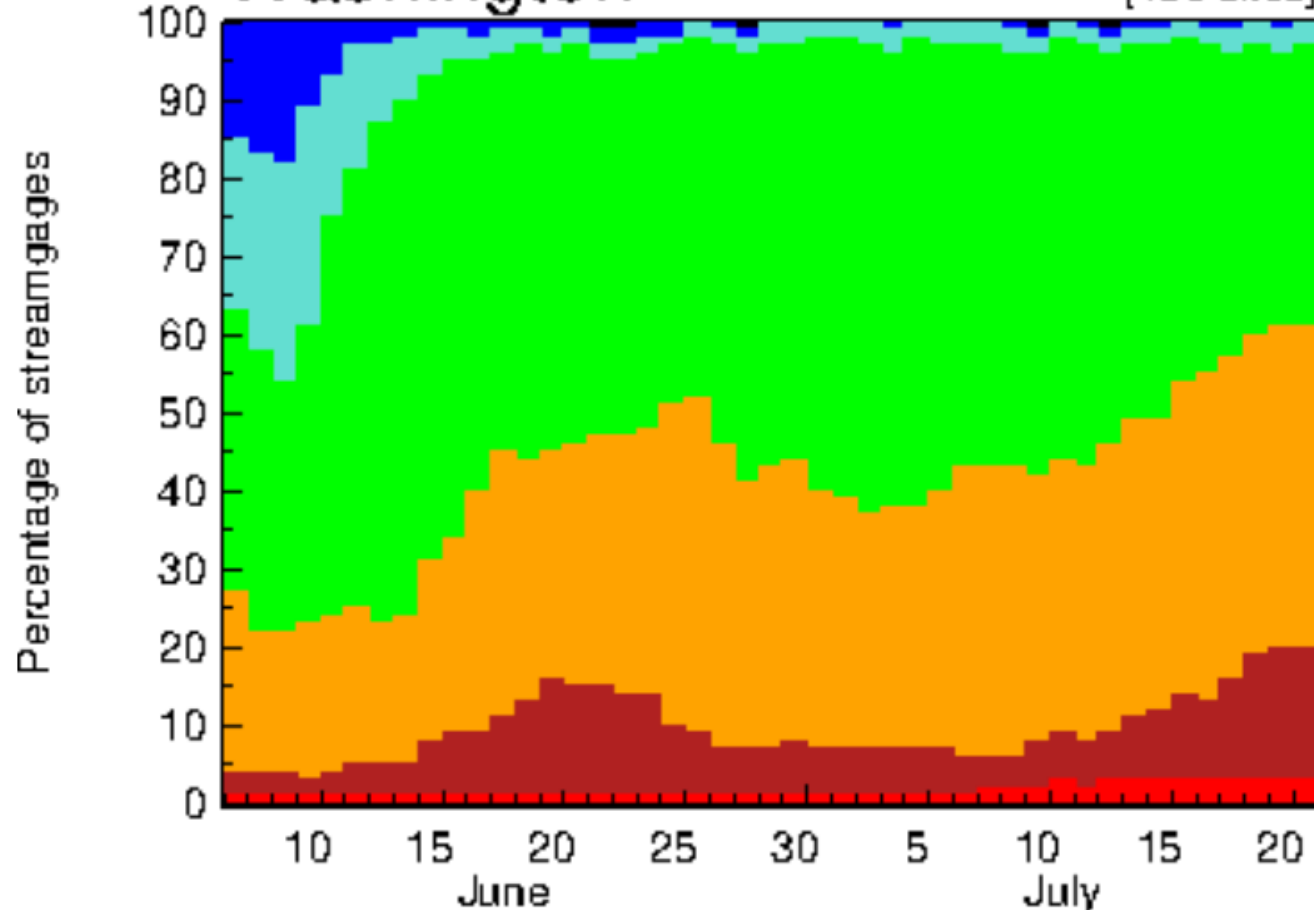
Explanation - Percentile classes						
Record Low	<10	10-24	25-75	76-90	>90	Record High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

7-day average streamflow

7-day average streamflow as of 22 July 2024 is below normal

Last 45 Days Washington

[130 sites]

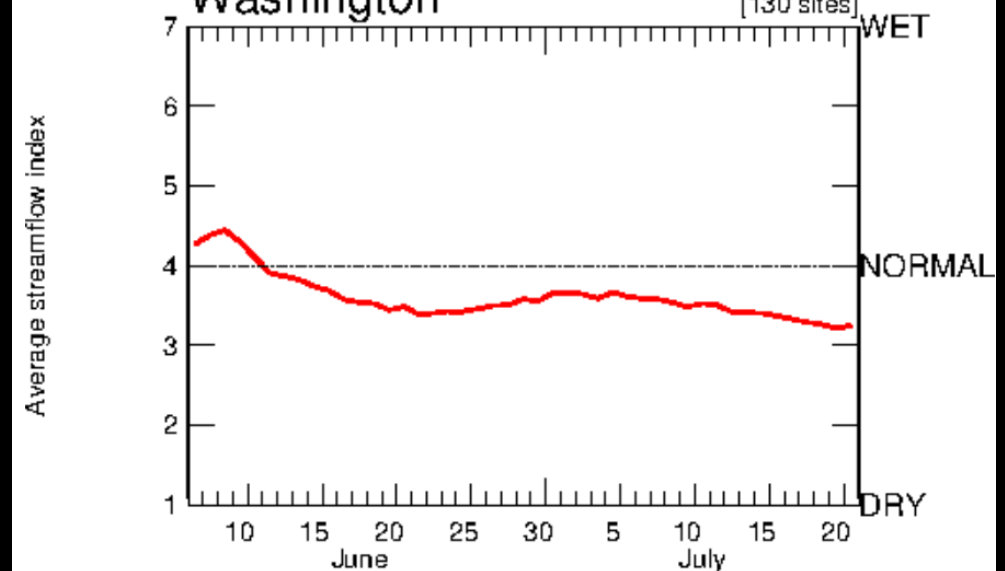


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Last 45 Days

Washington

[130 sites]



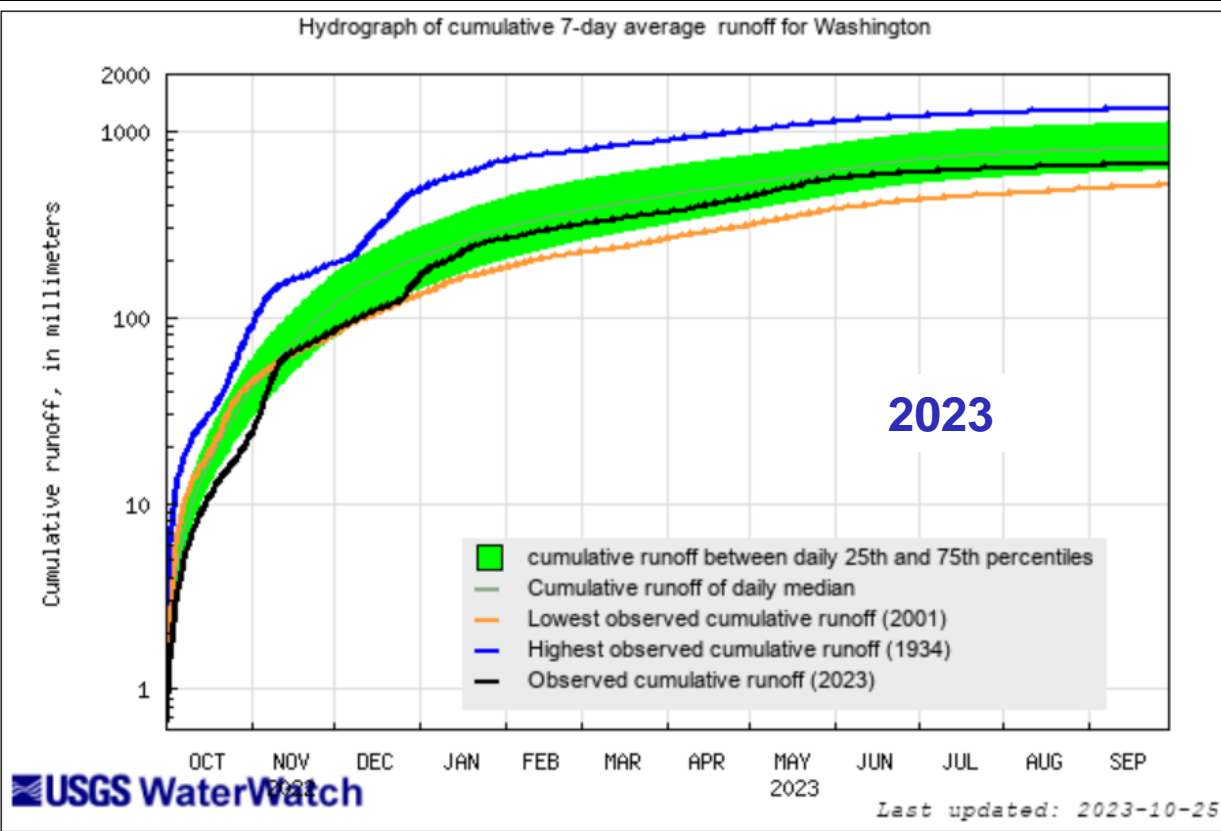
Explanation - Percentile classes

Record Low	<10	10-24	25-75	76-90	>90	Record High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

Cumulative runoff hydrograph

Area-based runoff based on 7-day average

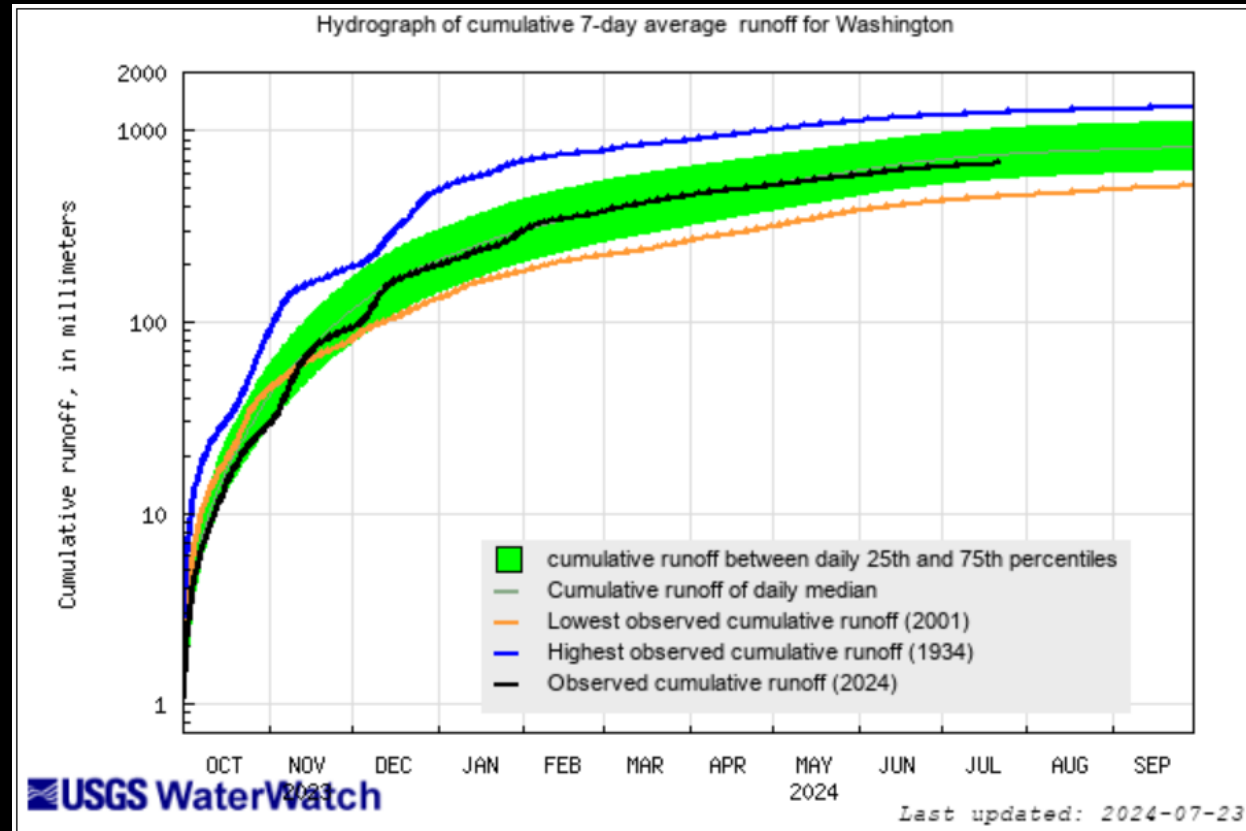
Normal in 2024 as of 22 July



2023 water year

Area-based runoff may have been computed from mixed regulated and unregulated streamflows

<https://waterwatch.usgs.gov/>

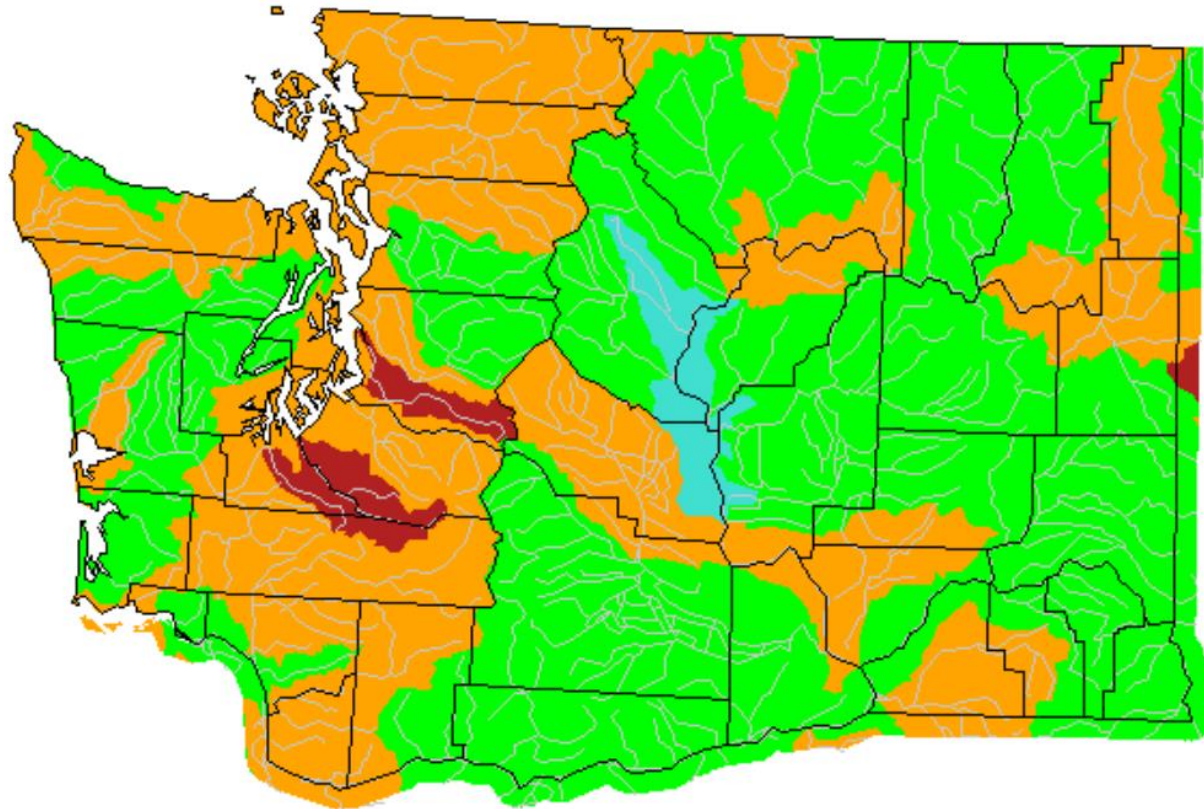


2024 water year

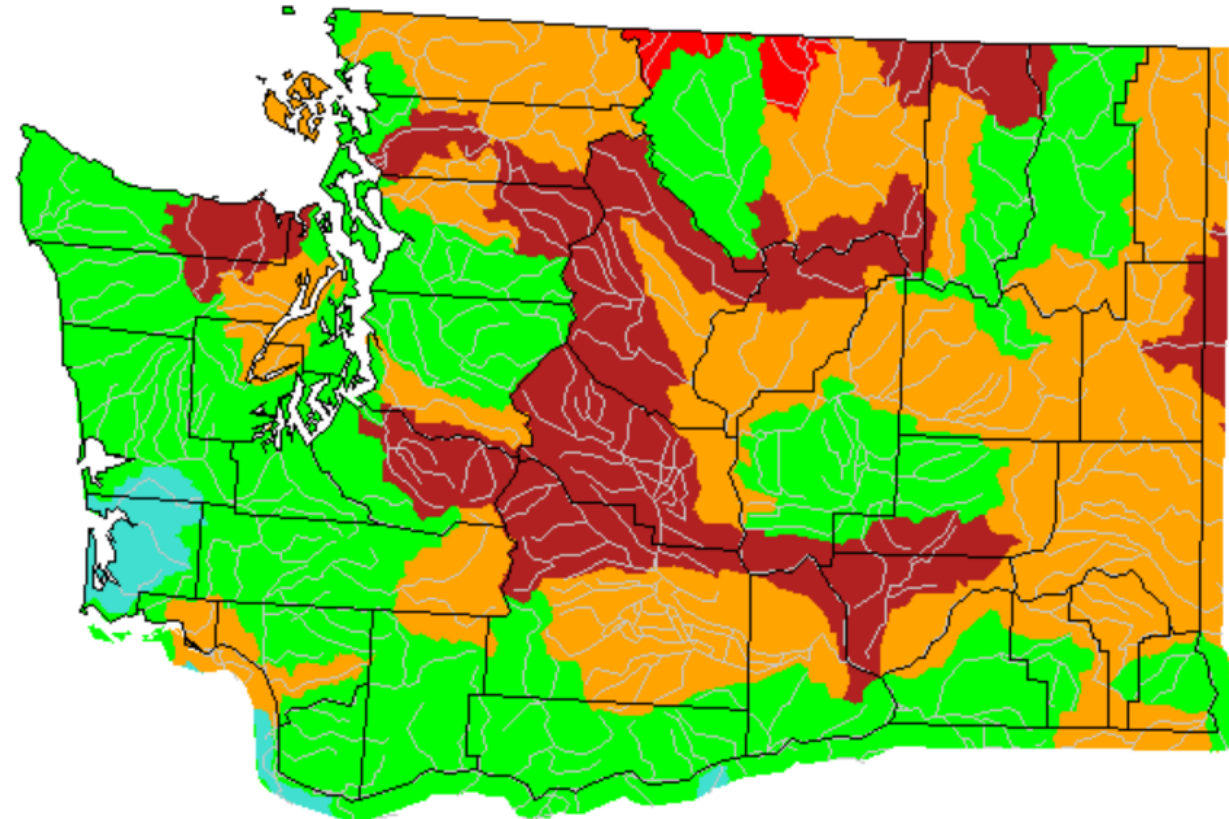
Preliminary Information-Subject to Revision.
Not for Citation or Distribution.

Monthly average streamflow compared to historical streamflow

April 2024



May 2024

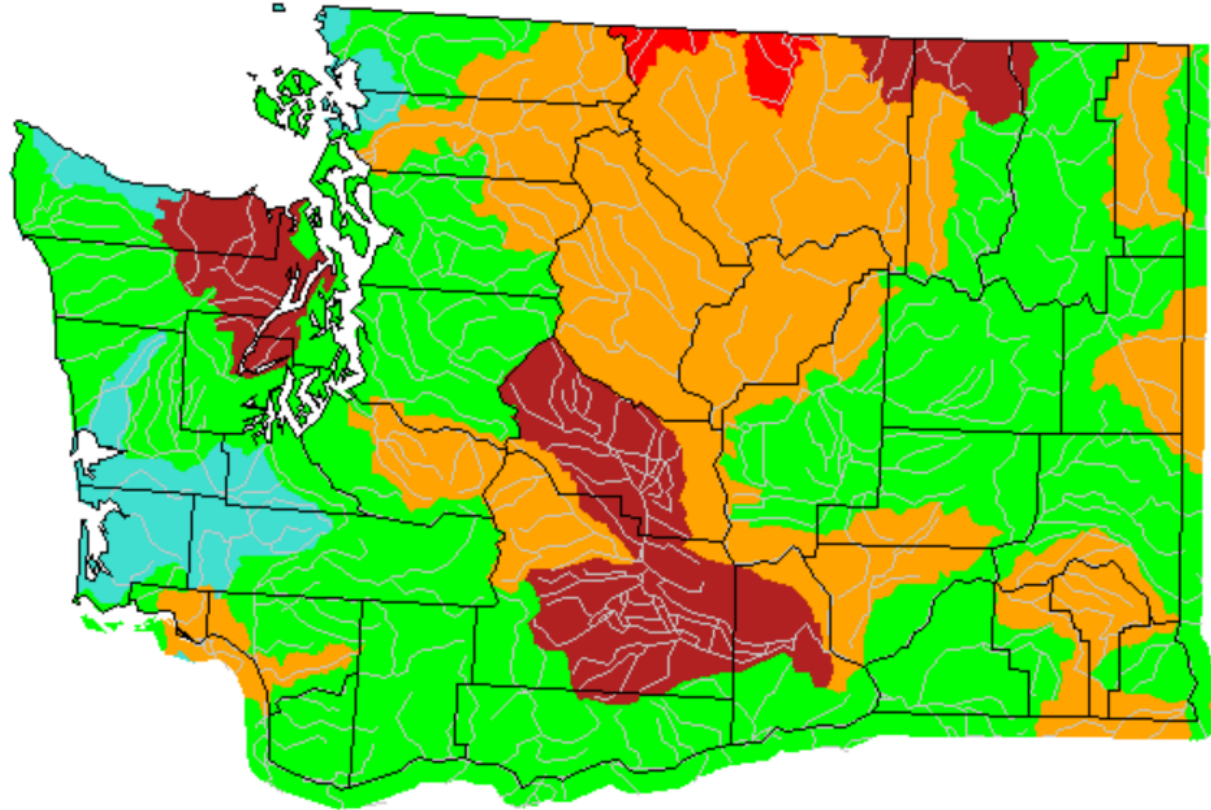


Explanation - Percentile classes						
Record Low	<10	10-24	25-75	76-90	>90	Record High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

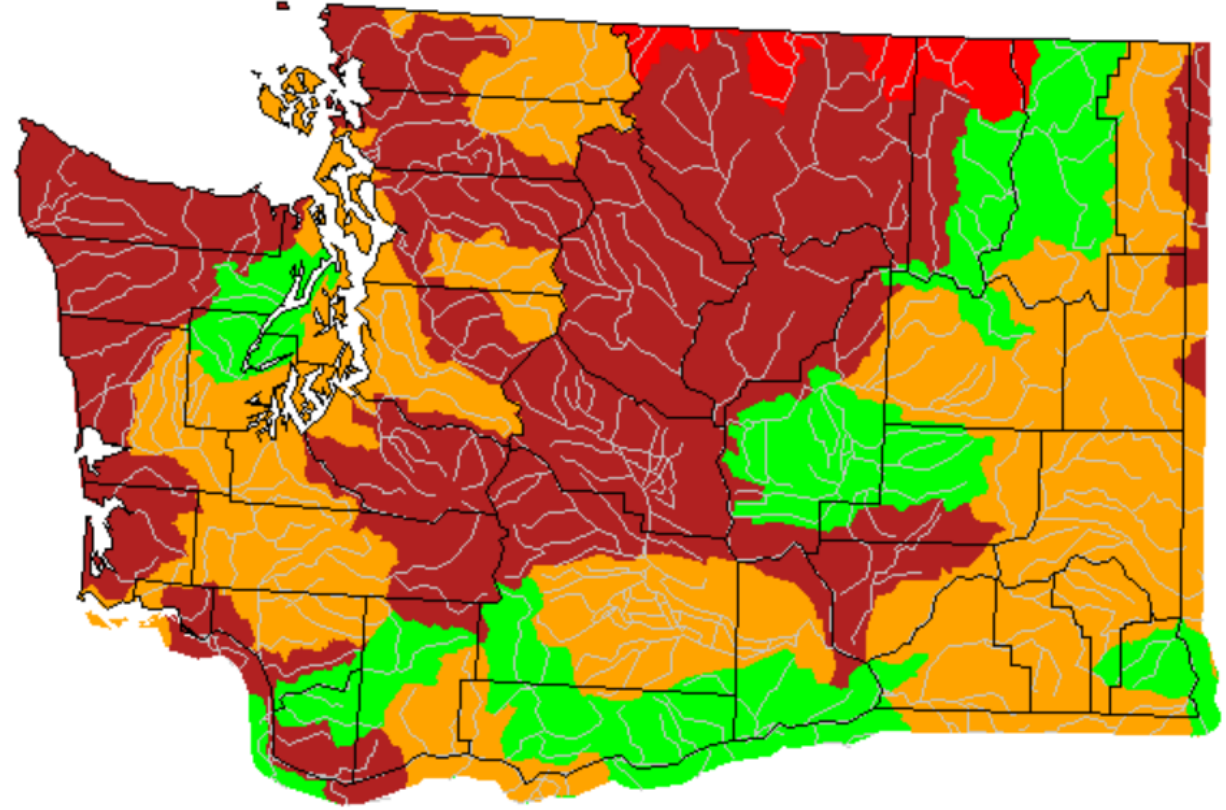
Preliminary Information-Subject to Revision. Not for Citation or Distribution.

Monthly average streamflow compared to historical streamflow

June 2024



June 2023

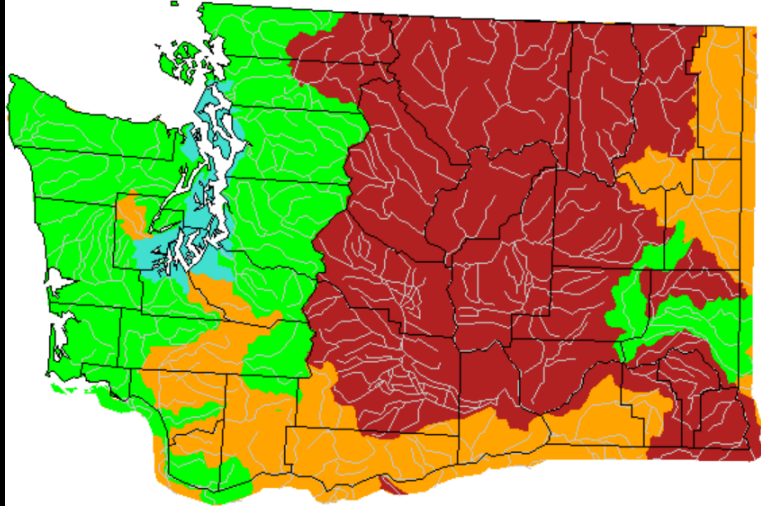


Explanation - Percentile classes						
Record Low	<10	10-24	25-75	76-90	>90	Record High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

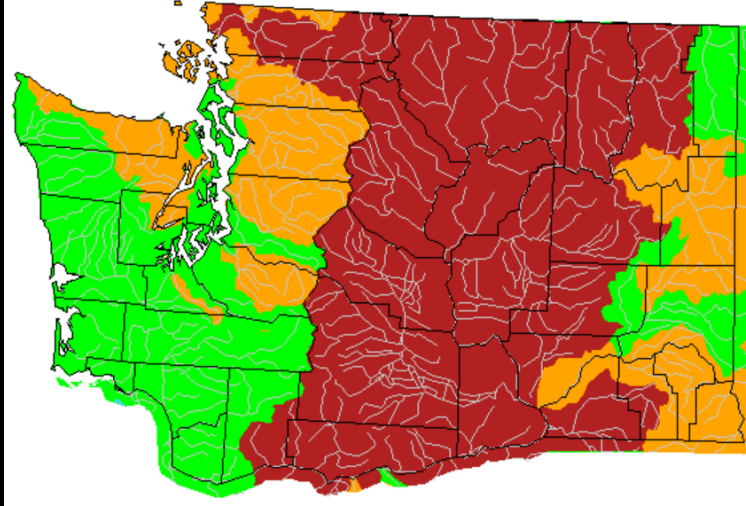
Preliminary Information-Subject to Revision. Not for Citation or Distribution.

April monthly average streamflow compared to historical streamflow

June 2001



June 2005

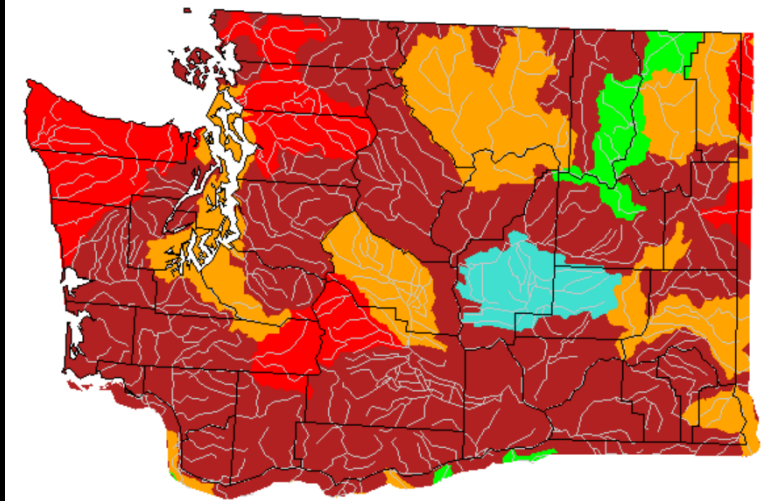


Explanation - Percentile classes						
Record Low	<10	10-24	25-75	76-90	>90	Record High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

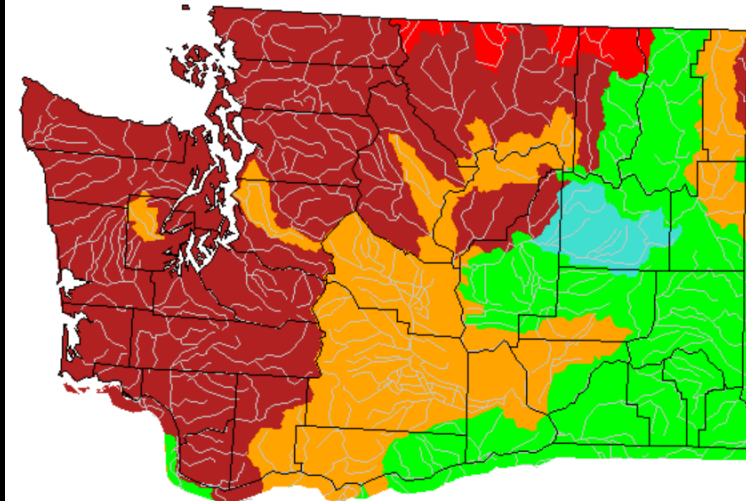
<https://waterwatch.usgs.gov/>

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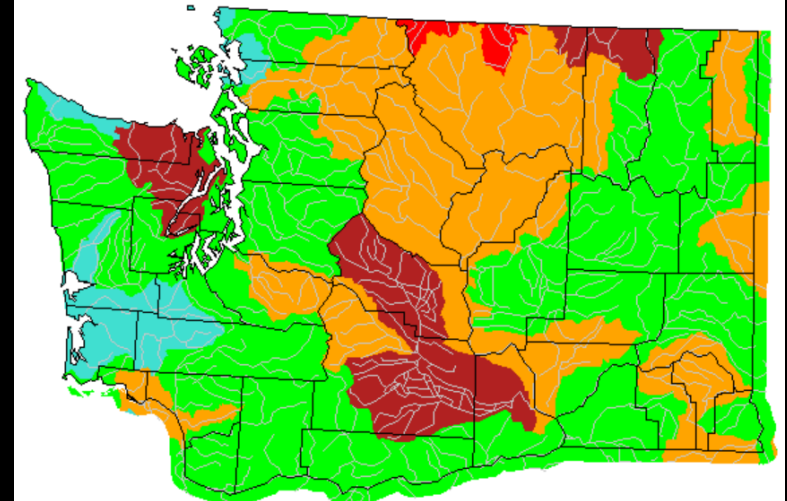
June 2015



June 2019



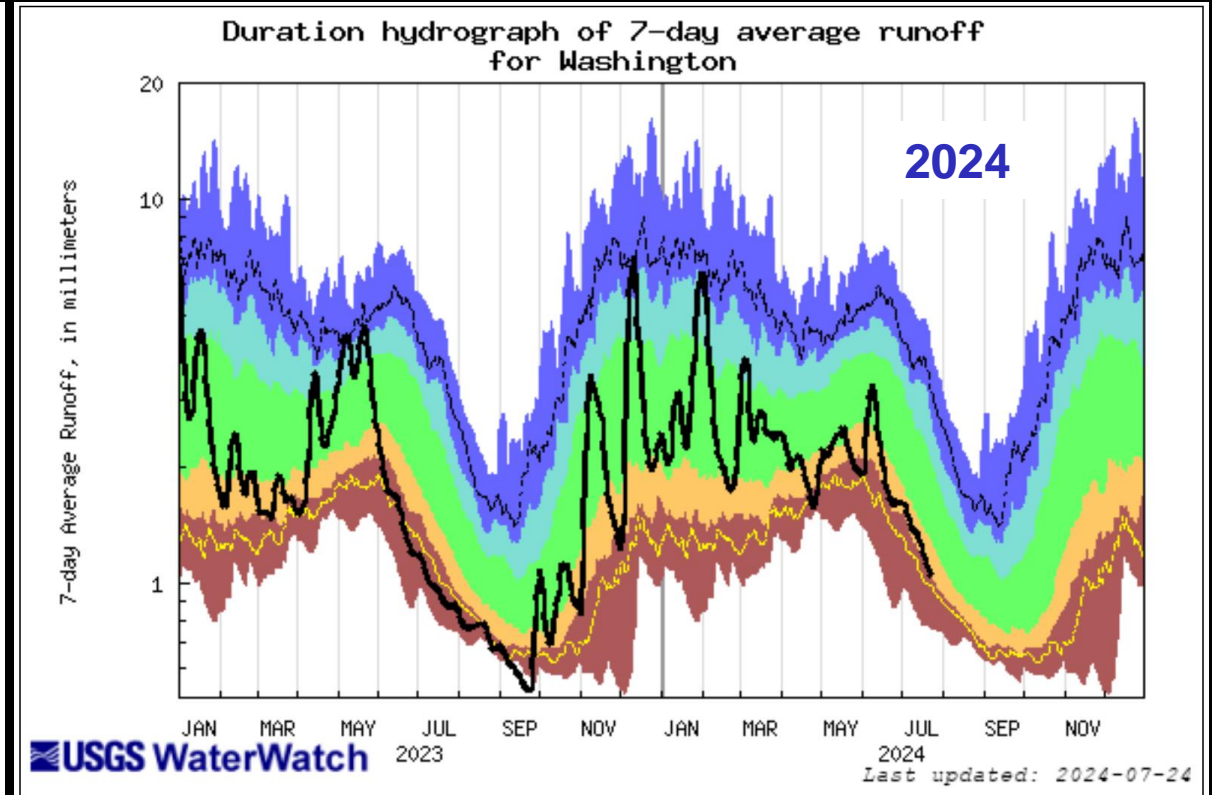
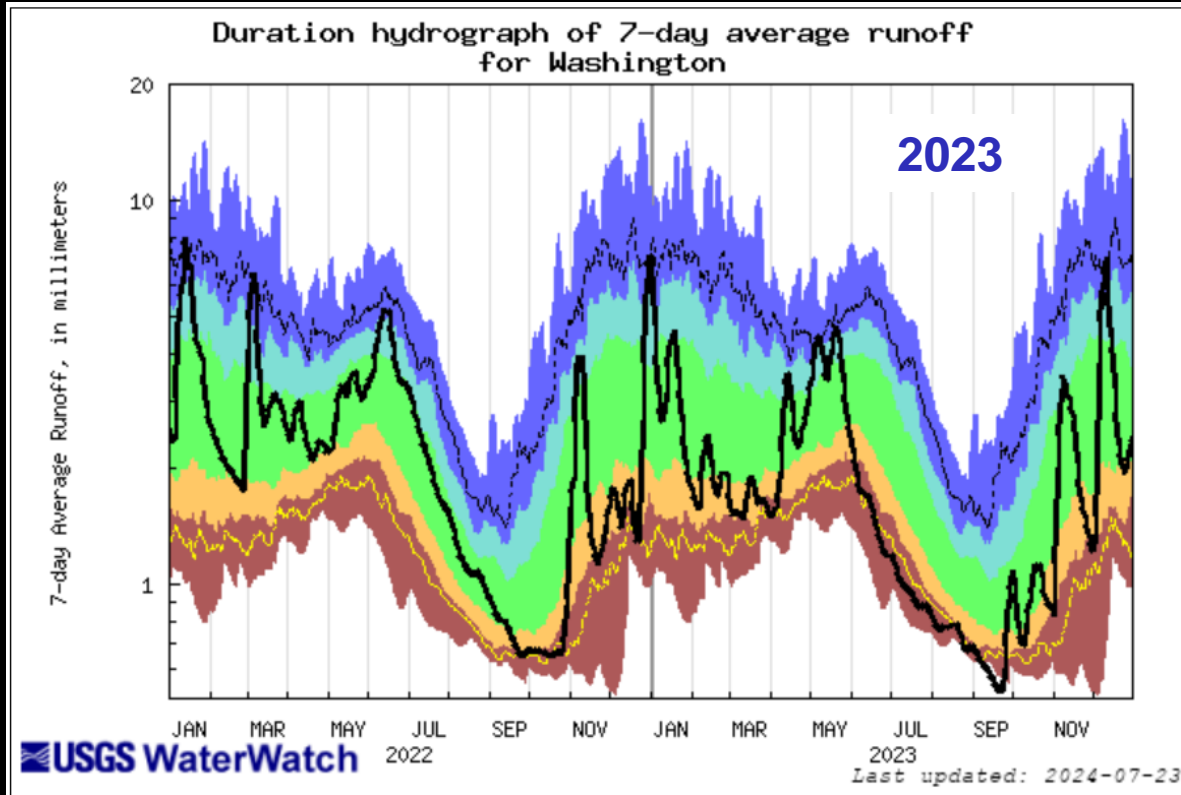
June 2024



Area-Based Runoff Duration Hydrograph

7-day average streamflow

Duration hydrograph for the year compared to recent years of drought



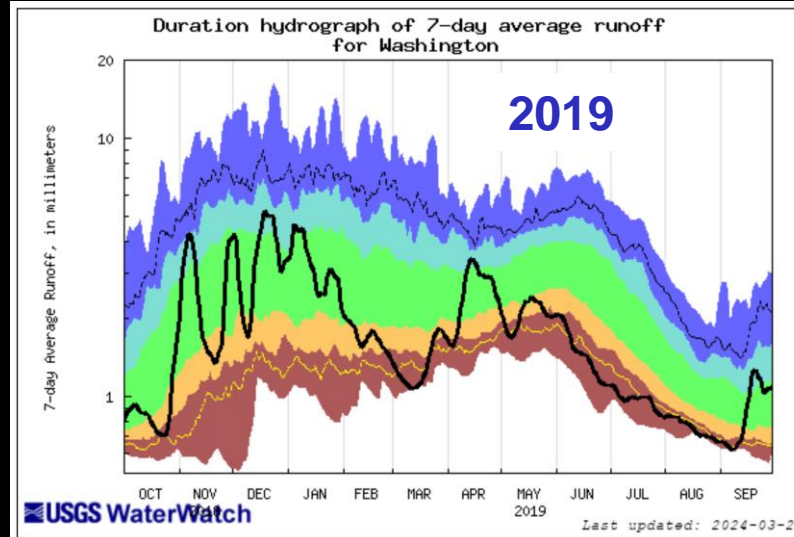
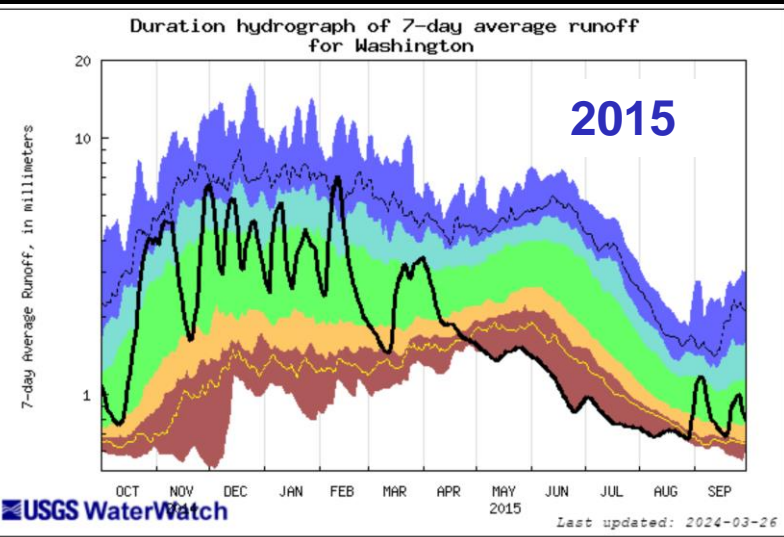
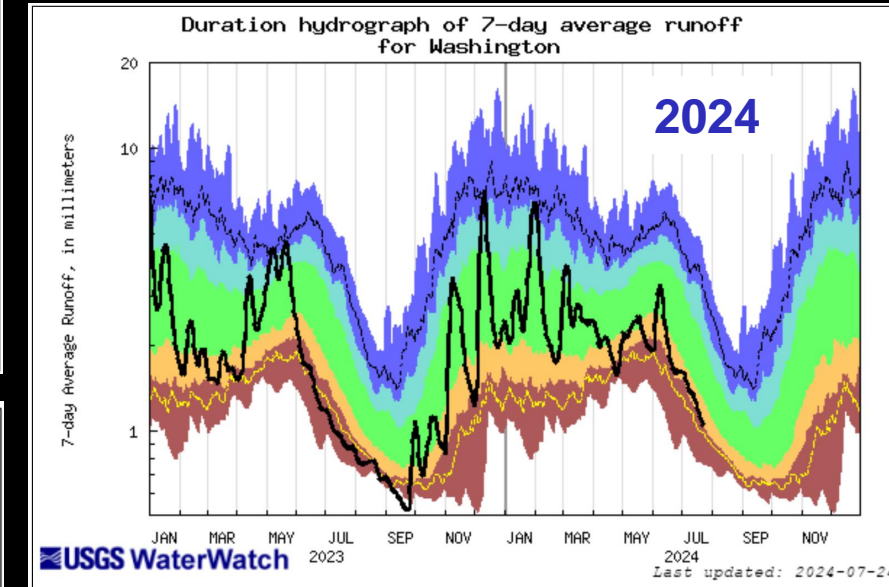
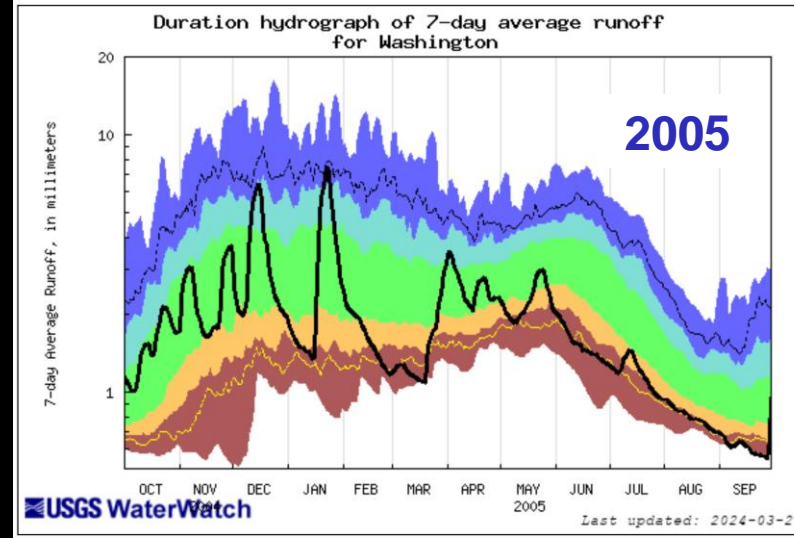
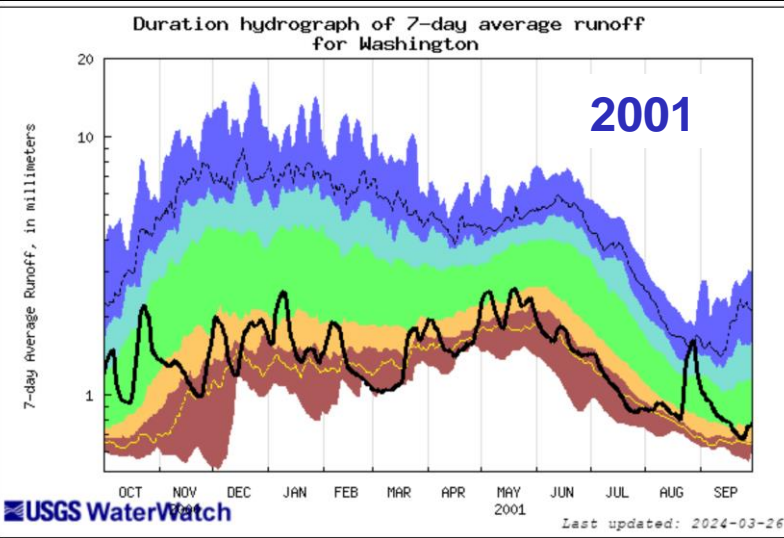
Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile - highest
Much below Normal	Below normal	Normal	Above normal	Much above normal		
						Flow

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Area-Based Runoff Duration Hydrograph

7-day average streamflow

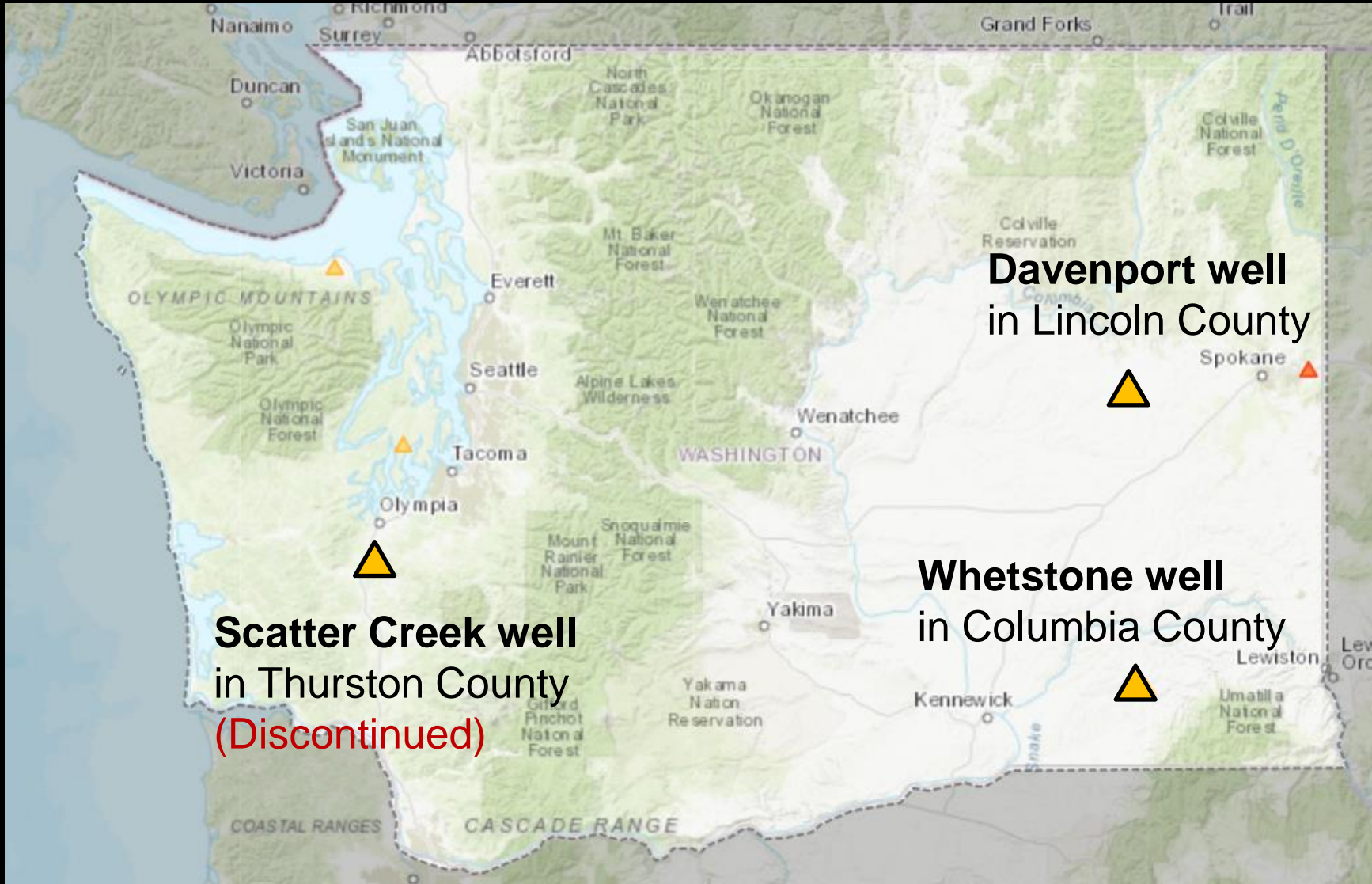
Duration hydrograph for the year compared to recent years of drought



Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile-highest	Flow
Much below Normal	Below normal	Normal	Above normal	Much above normal			

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Three reference groundwater wells



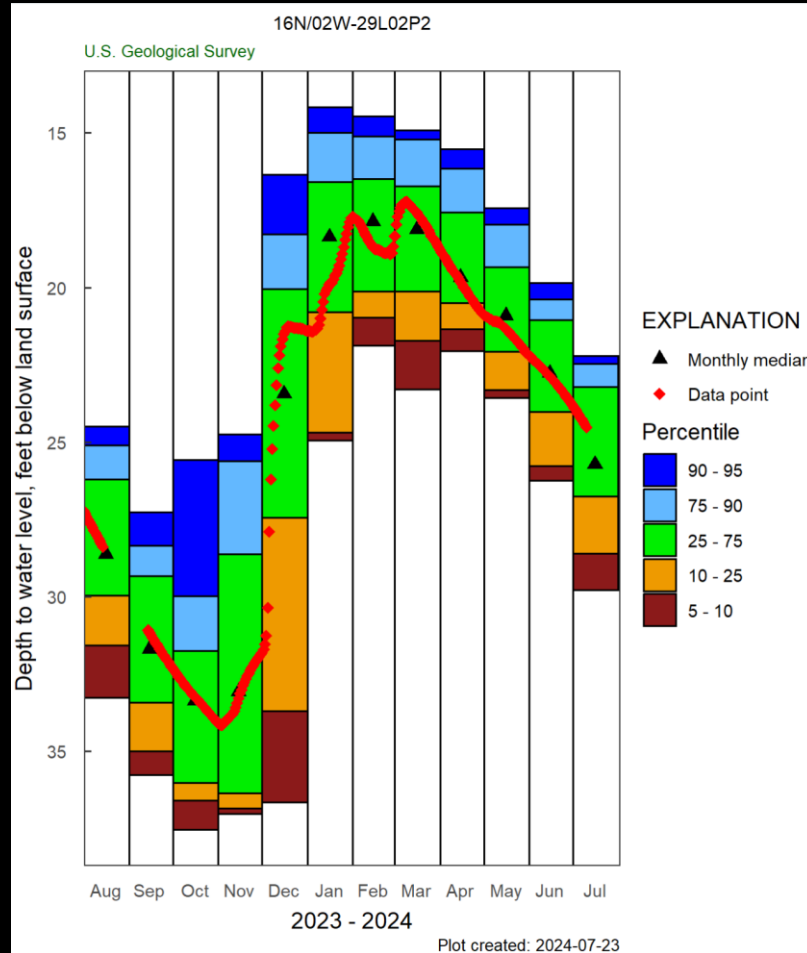
- All three groundwater Monitoring Network wells on the west side of the state are discontinued due to a lack of funding, including Scatter Creek well.
- Equipment has been removed or will be removed by Oct. 1.
- Three wells remain on the east side of the state.

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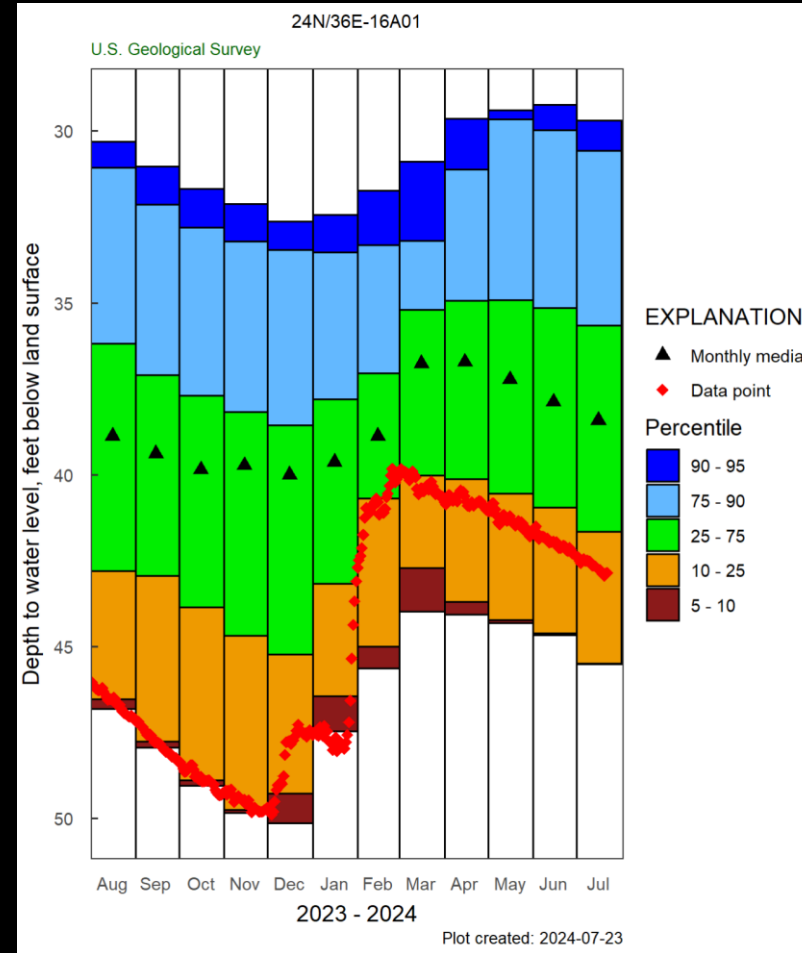
Groundwater Conditions

Monthly groundwater levels as of 22 July 2024

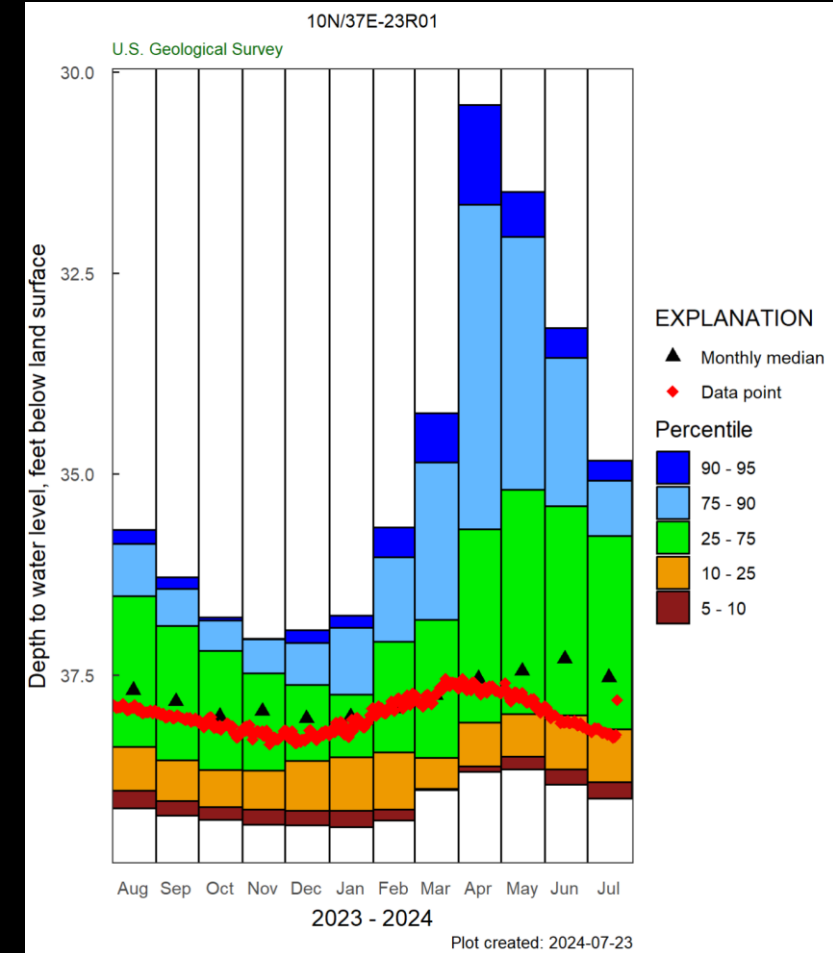
Scatter Creek well



Davenport well

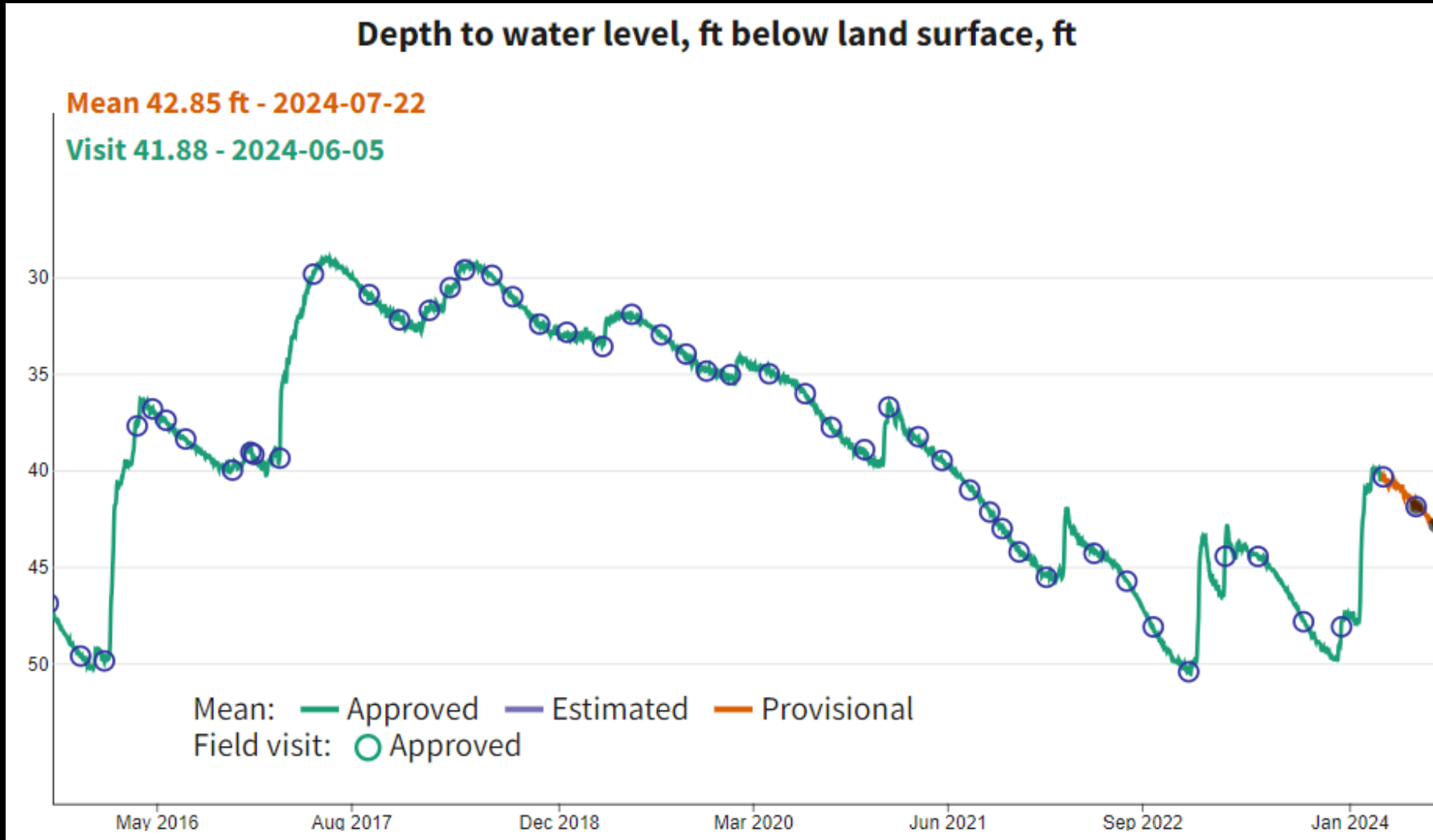


Whetstone well



Davenport Well Groundwater Conditions

Well ID: 24N/36E-16A01 - 473442118162201



Well Details

- Lincoln County
- 117-ft deep
- Wanapum Basalt

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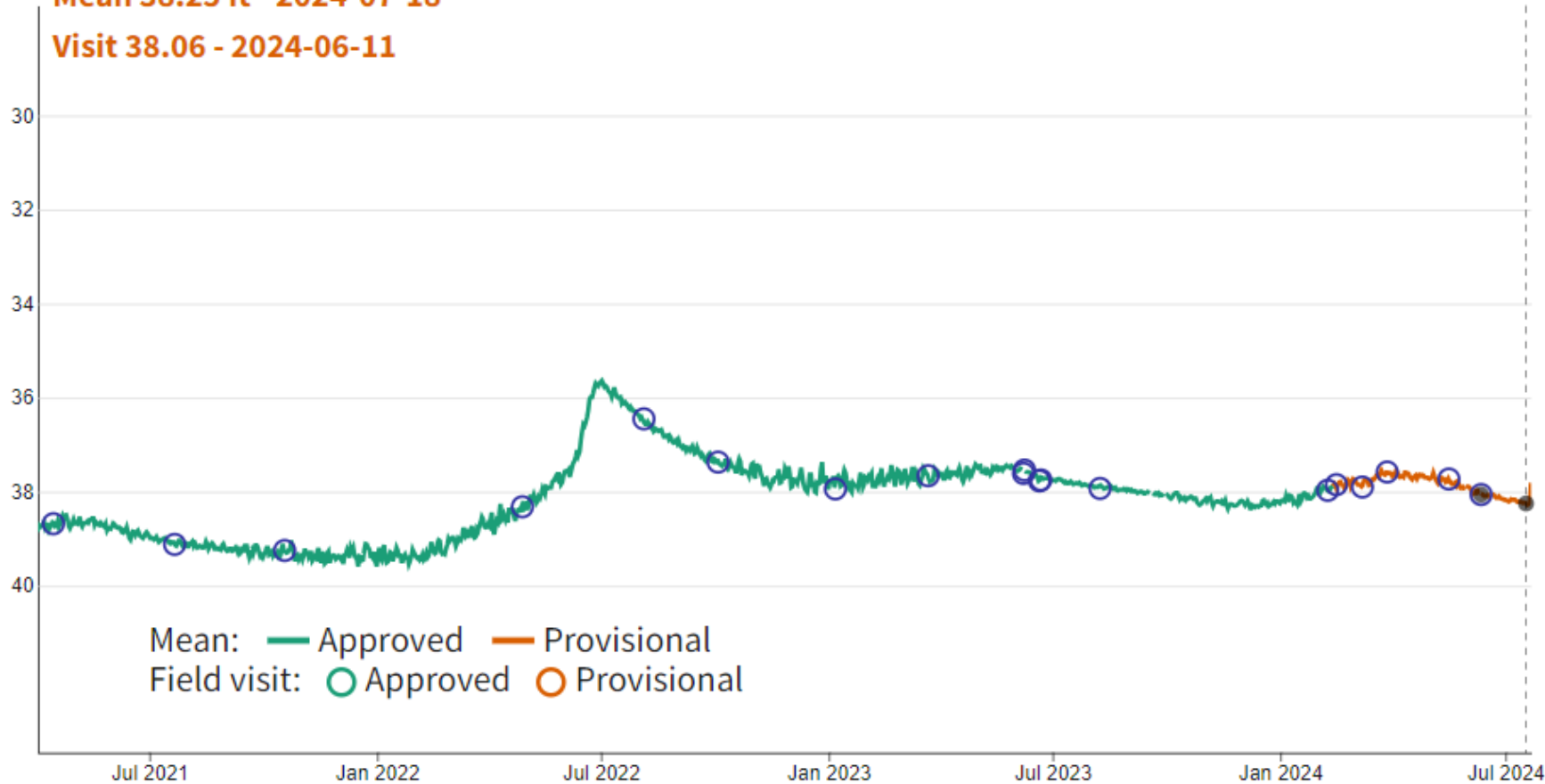
Whetstone Well Groundwater Conditions

Well ID: 10N/37E-23R01 - 461935118081501

Depth to water level, ft below land surface, ft

Mean 38.25 ft - 2024-07-18

Visit 38.06 - 2024-06-11



Well Details:

- Columbia County near Waitsburg
- 172.5-ft deep
- Grande Ronde Basalt Formation

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Information-
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Summary of Washington Streamflow and Groundwater Conditions as of 22 July 2024

7-day average streamflow at eight index gaging stations:

Normal

- Chehalis River nr. Grand Mound

Below Normal

- Puyallup River nr. Orting
- Hangman Creek
- Walla Walla River
- EF Lewis River
- American River
- NF Nooksack River

Much Below Normal

- Quinault River

Cumulative Runoff Hydrograph **Normal**

Monthly average groundwater conditions:

Normal

- Scatter Creek well

Below Normal

- Davenport well
- Whetstone well

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USDA Natural Resources Conservation Service
Snow Survey and Water Supply Forecasting Program

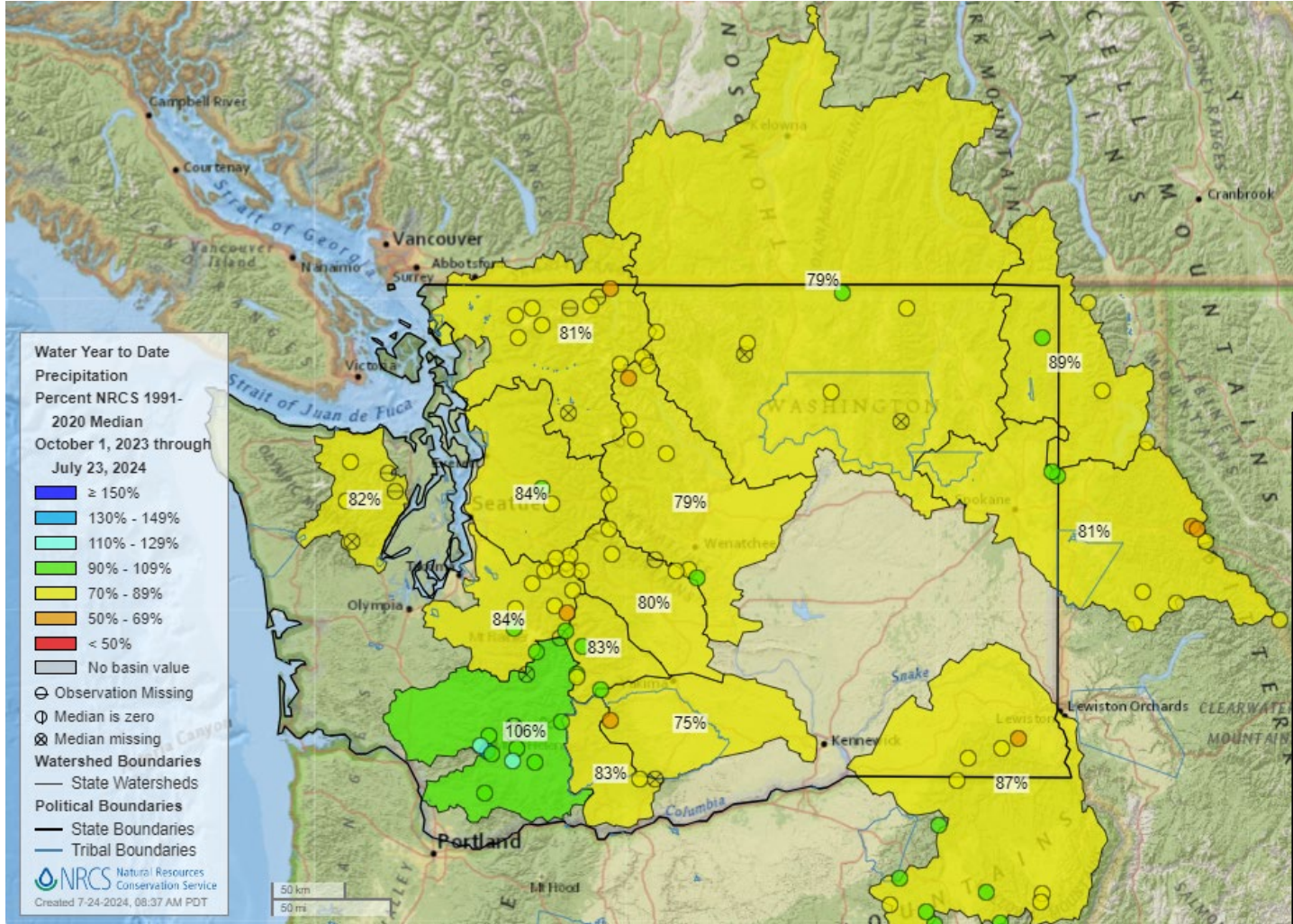
Washington
Water Supply Availability Committee
July 24, 2024

Matt Warbritton
Supervisory Hydrologist
USDA NRCS SSWSF
Portland Data Collection Office
matt.warbritton@usda.gov
503-307-2829



Precipitation Conditions

WYTD Precipitation – Basin Map

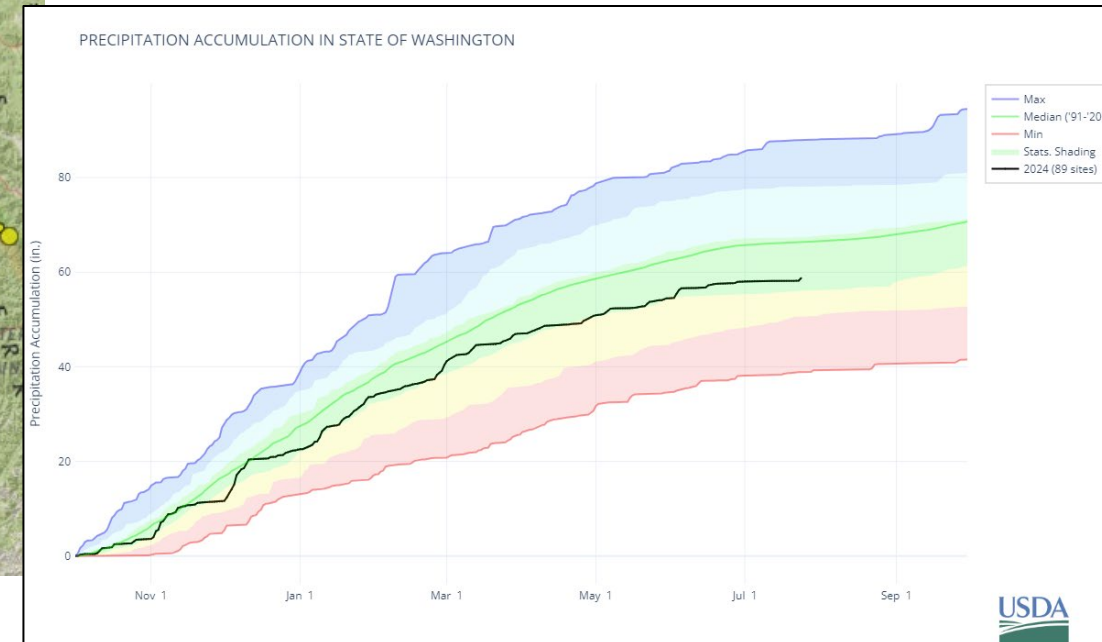


Statewide WYTD Precipitation:

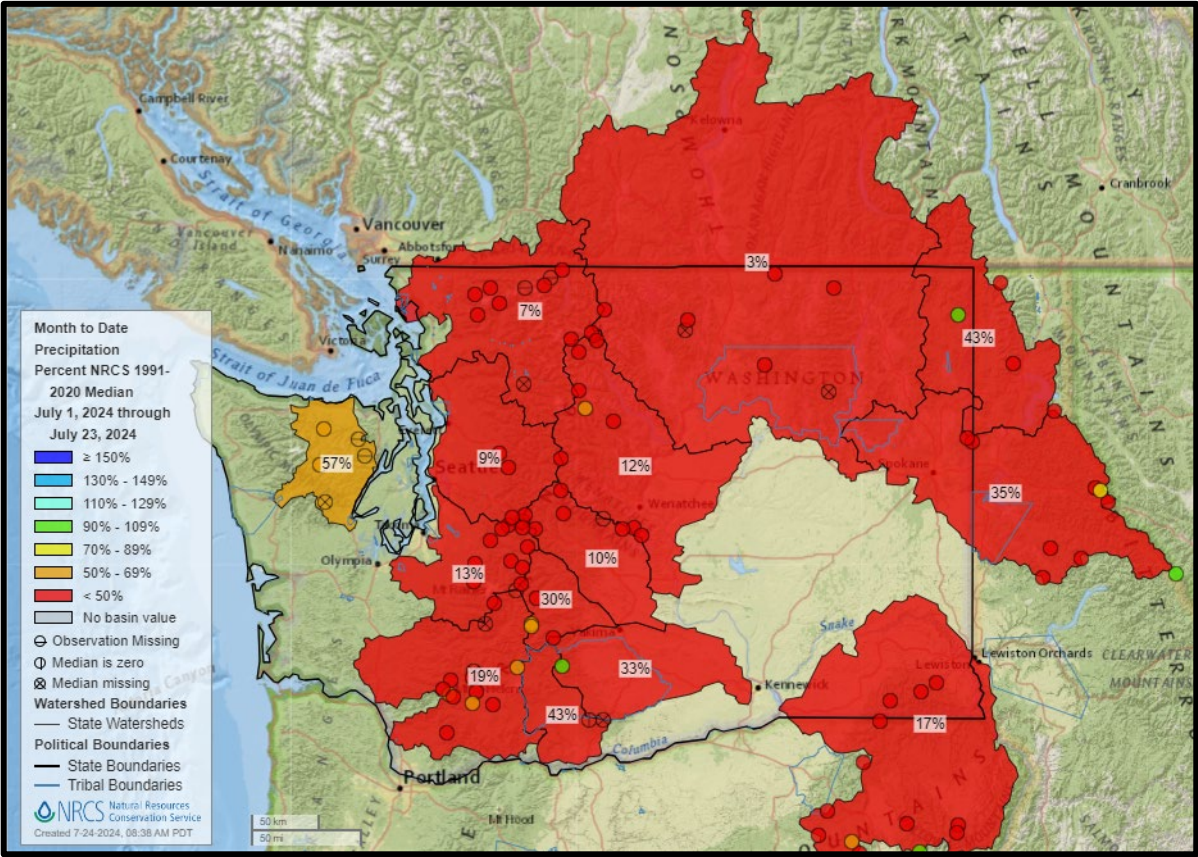
89% of normal

88% of normal last meeting

38 – percentile (normal period)

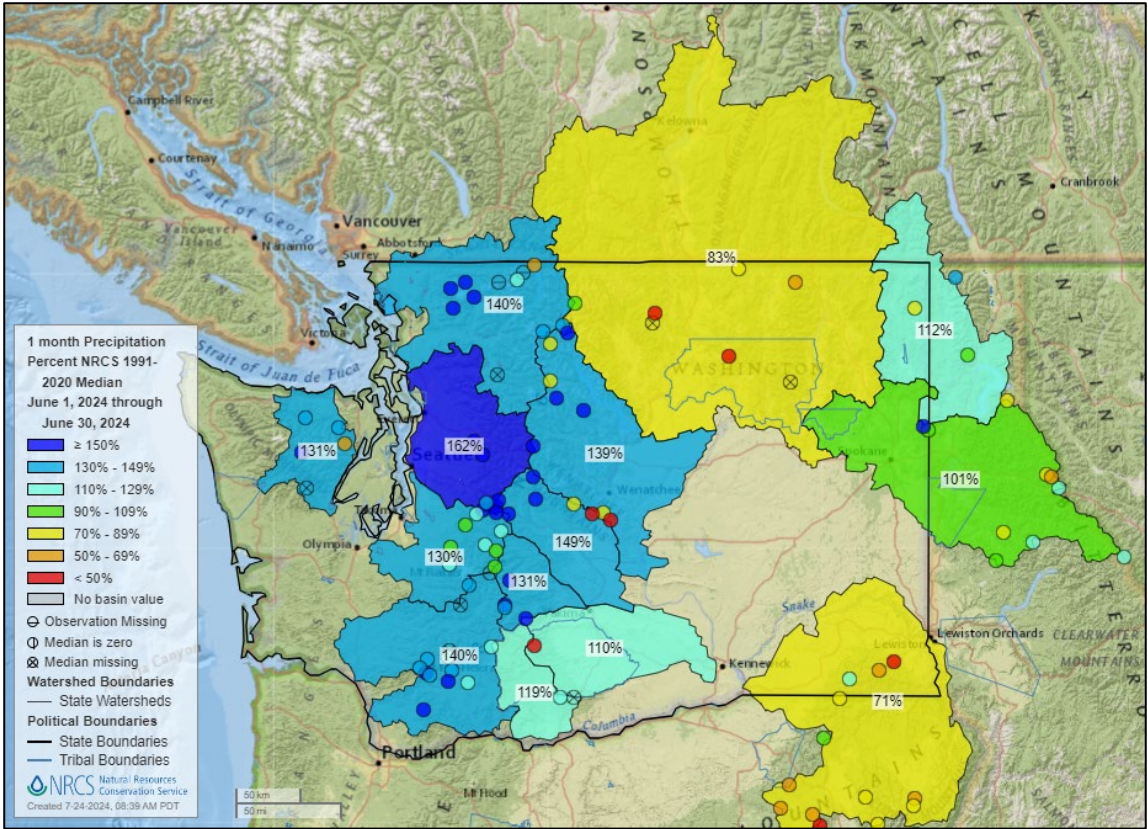


Month-to-Date Precipitation

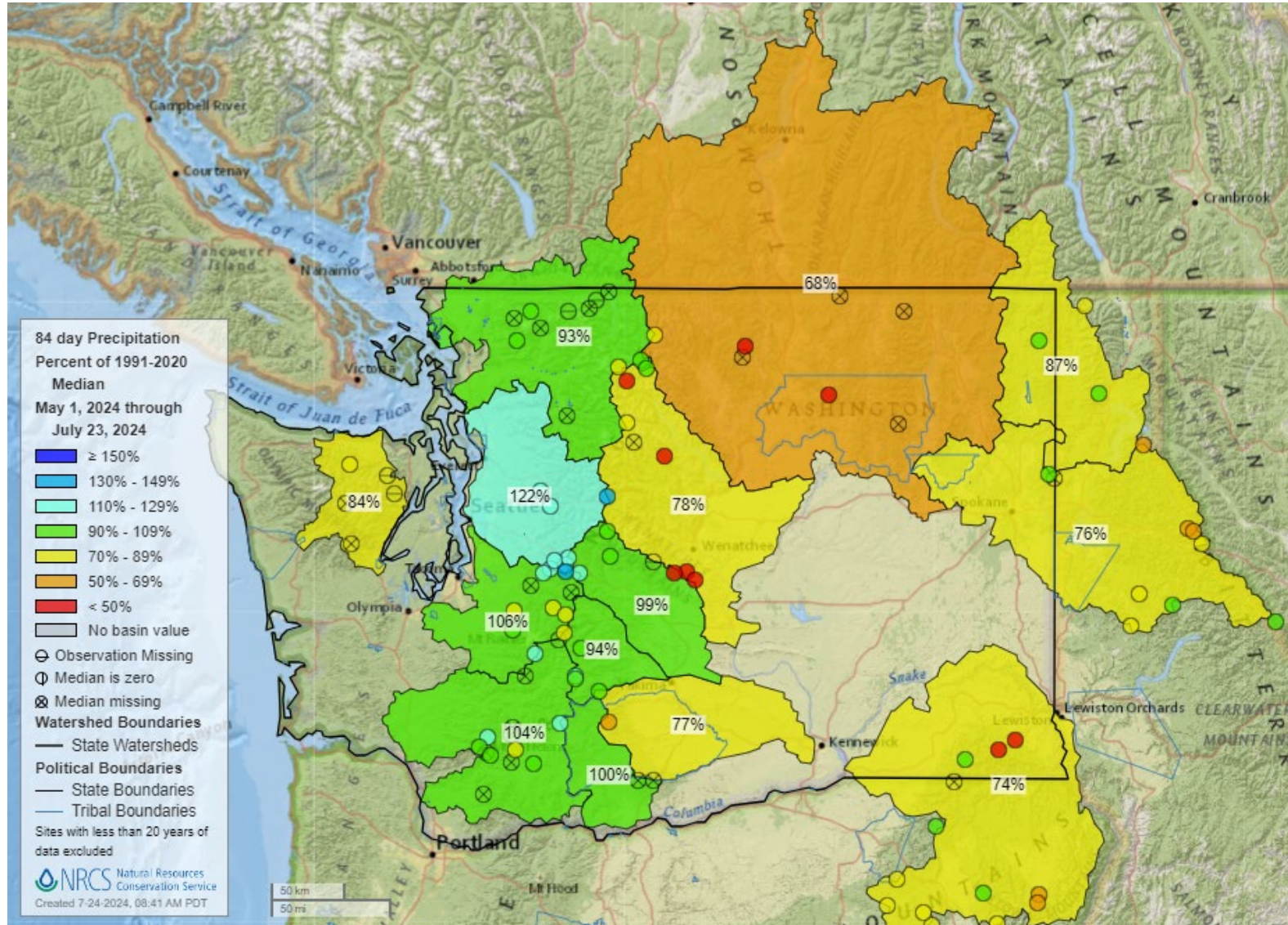


Month-to-date

June



May 1 – July 23 Precipitation



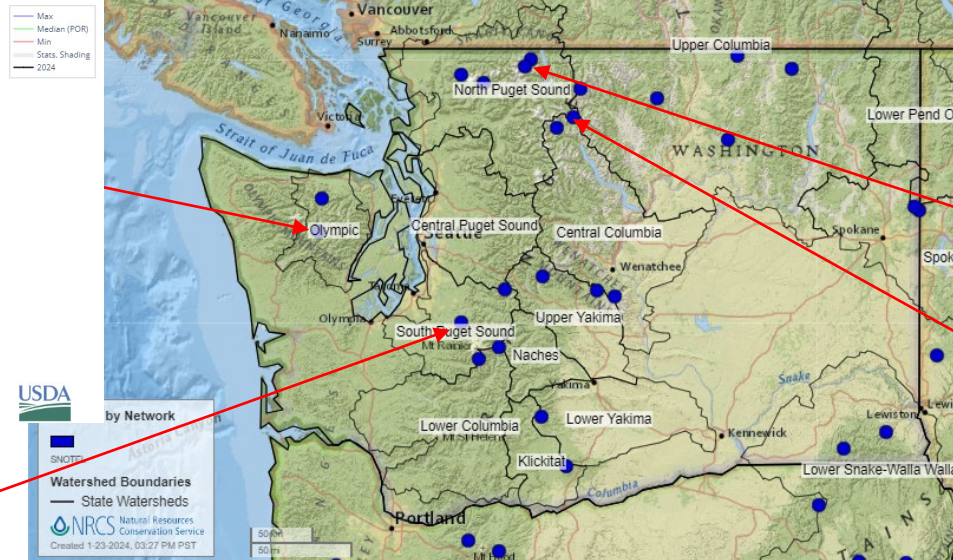
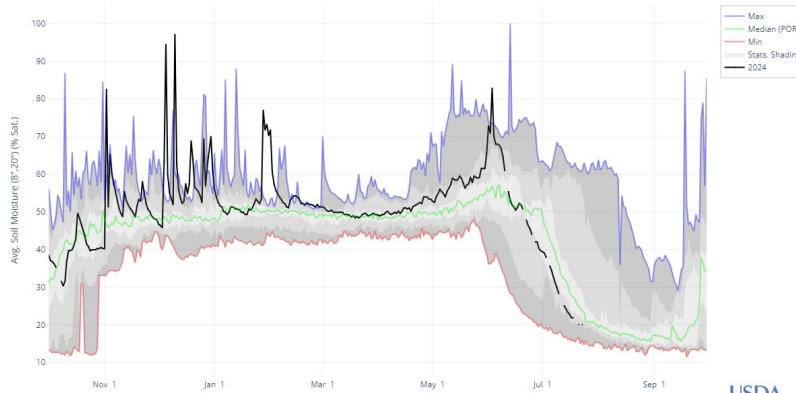


Soil Moisture

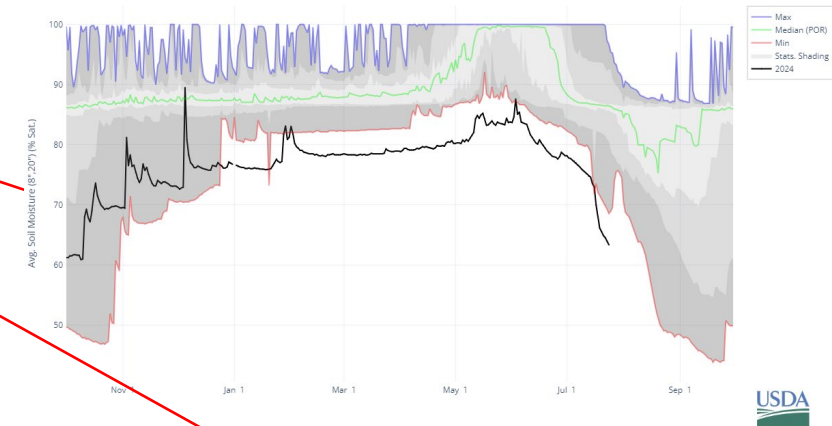
Soil Moisture

WY 2024 – Select Site Charts

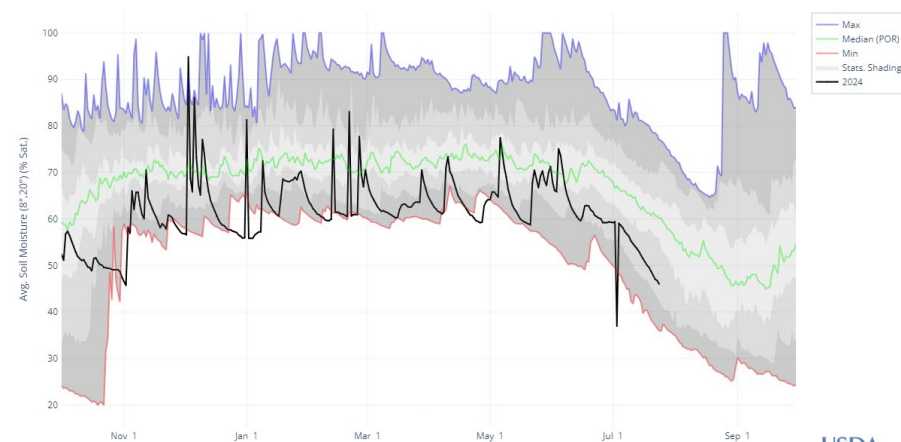
BUCKINGHORSE, WA (1107) AVG. SOIL MOISTURE (8",20")



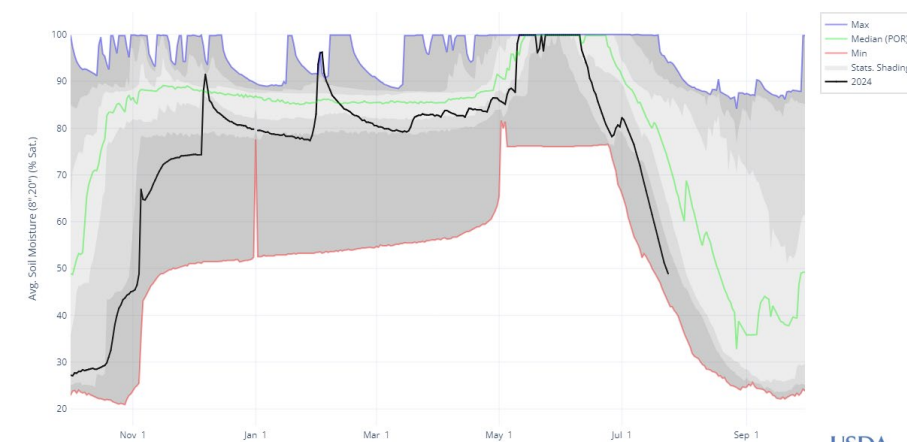
BEAVER PASS, WA (990) AVG. SOIL MOISTURE (8",20")



BURNT MOUNTAIN, WA (942) AVG. SOIL MOISTURE (8",20")



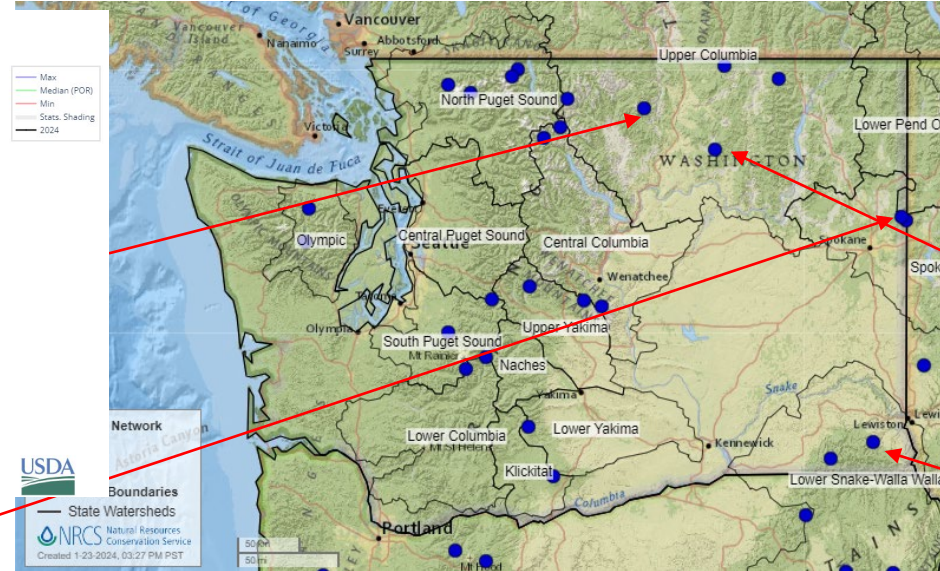
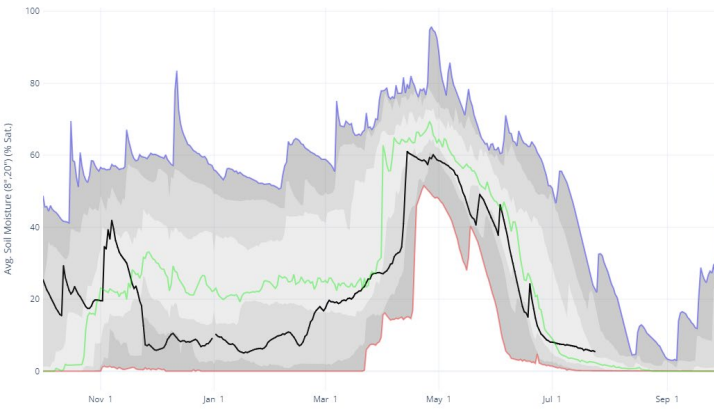
RAINY PASS, WA (711) AVG. SOIL MOISTURE (8",20")



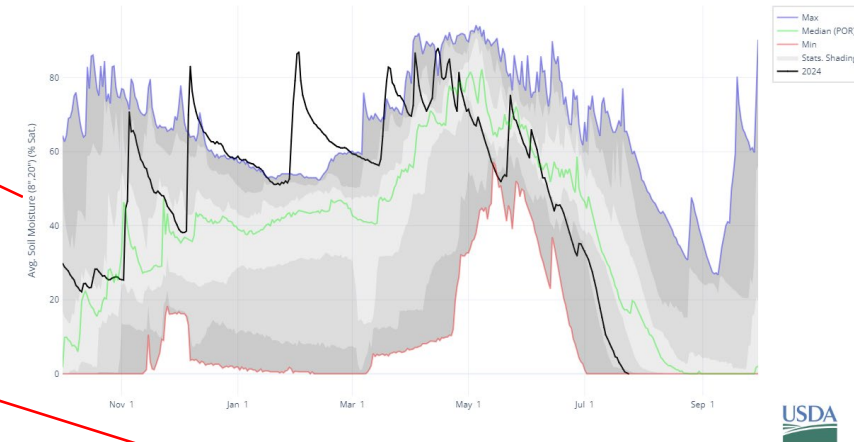
Soil Moisture

WY 2024 – Select Site Charts

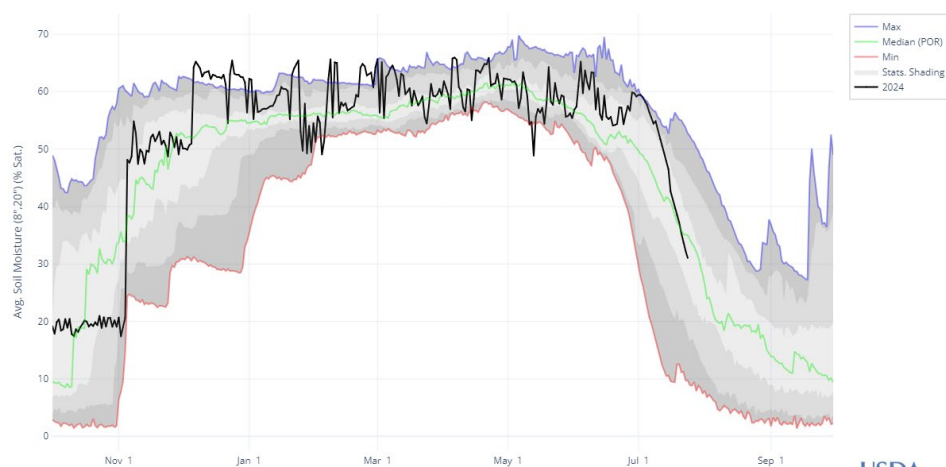
SALMON MEADOWS, WA (728) AVG. SOIL MOISTURE (8",20")



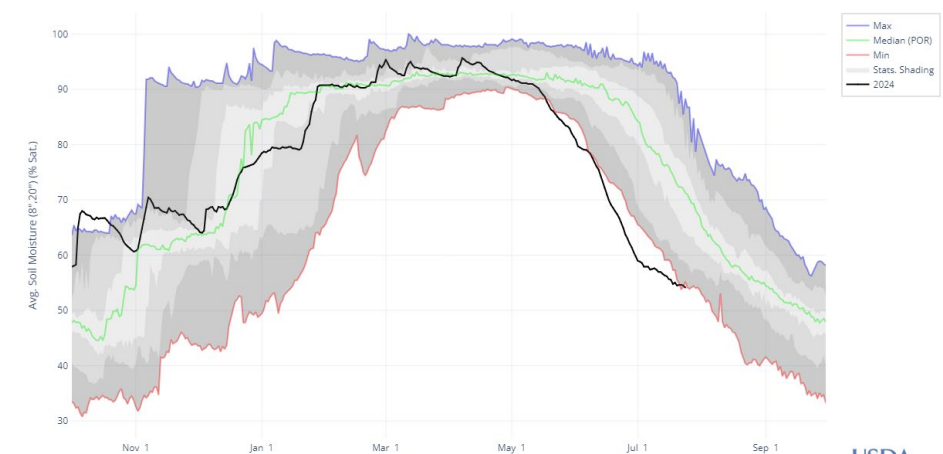
MOSES MTN, WA (644) AVG. SOIL MOISTURE (8",20")



RAGGED MOUNTAIN, ID (1081) AVG. SOIL MOISTURE (8",20")



SOURDOUGH GULCH, WA (985) AVG. SOIL MOISTURE (8",20")

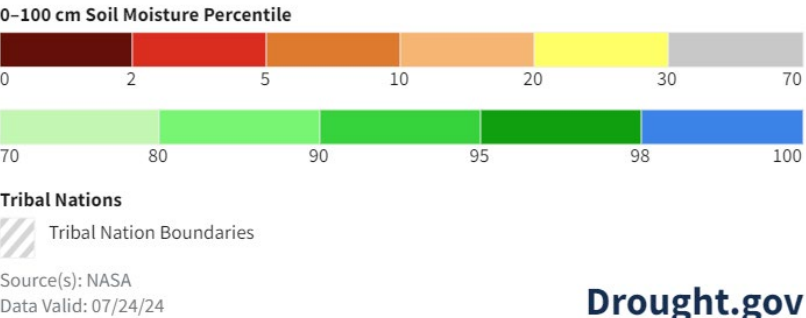
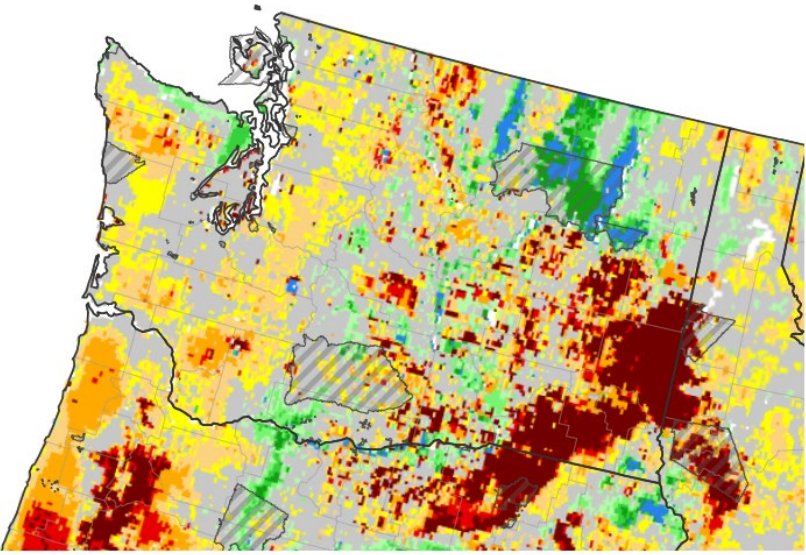


Soil Moisture

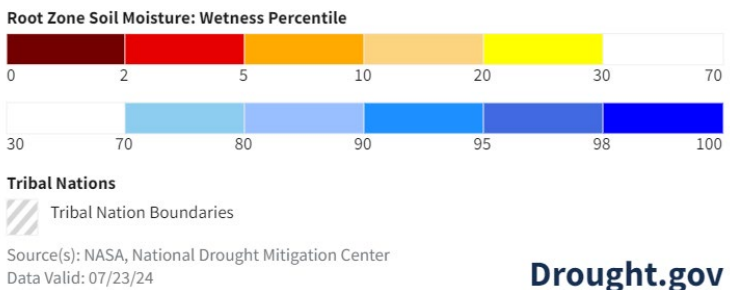
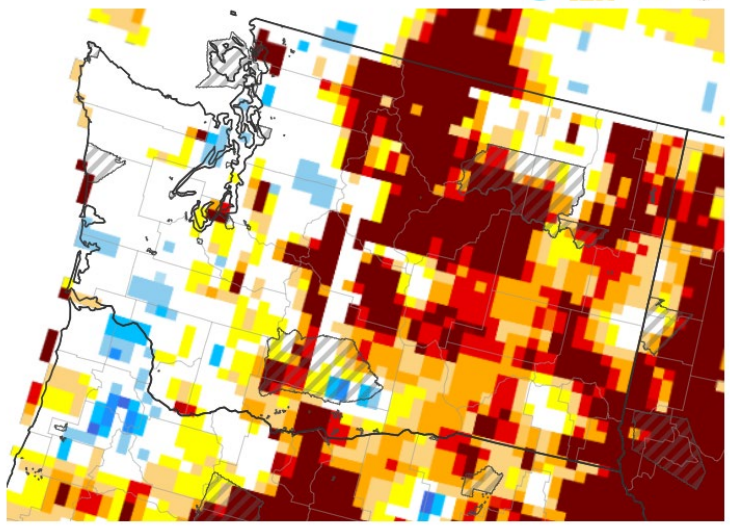
NASA GRACE and SPoRT-LiS

SPoRT-LiS

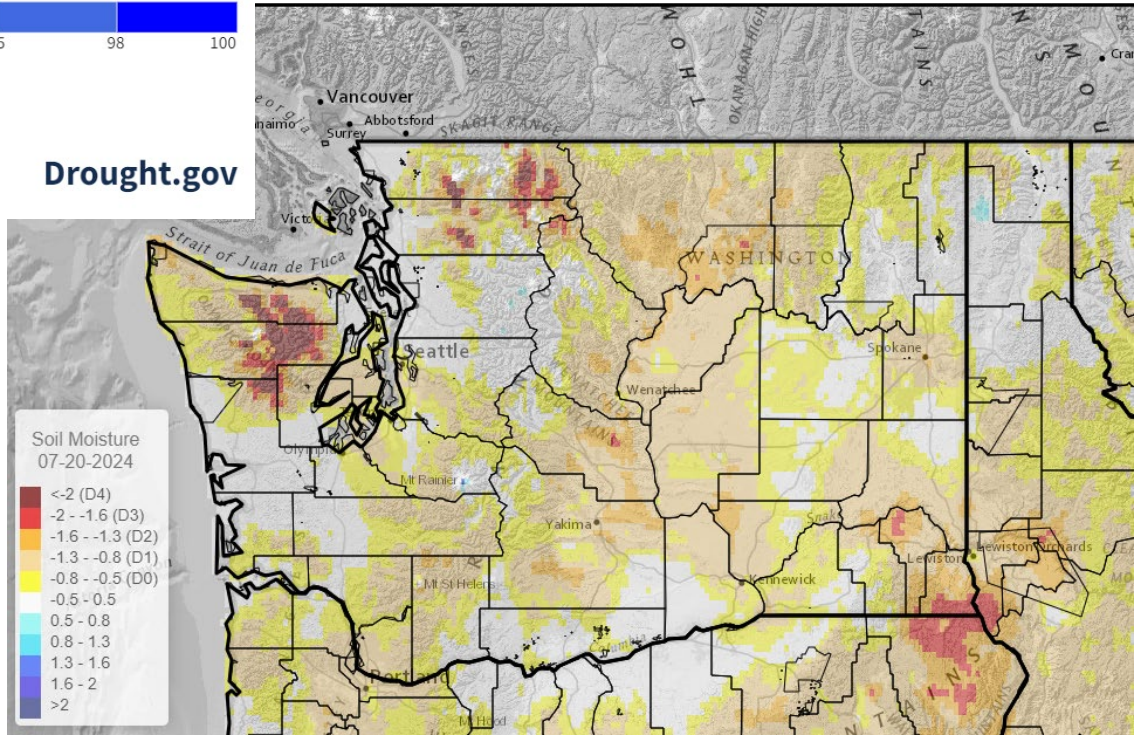
0-100 cm Soil Moisture Percentile



GRACE Root Zone Soil Moisture Percentile



Topofire Soil Moisture for 07-20-2024





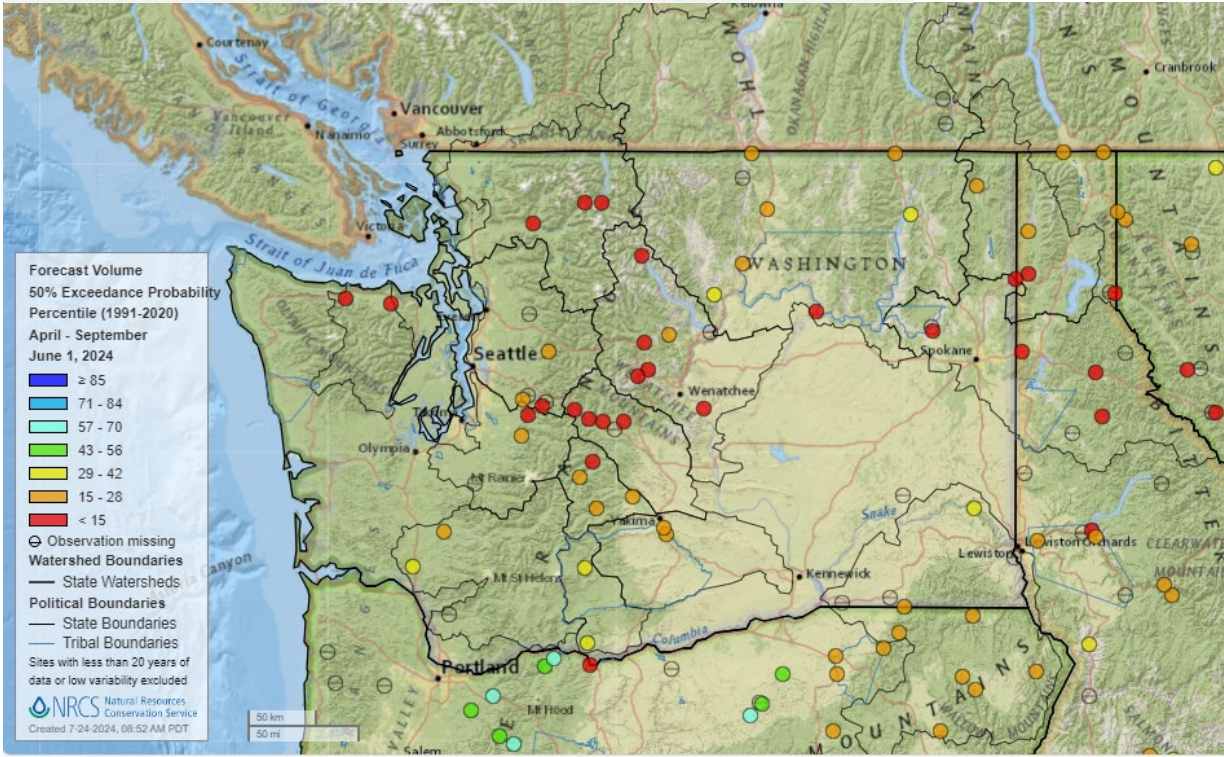
3-Month Observed Streamflow vs. June 1 Streamflow Forecasts

Observed vs. Forecasted Volumetric Streamflow

3-Month Observed Streamflow (Percentile)



June 1 Apr-Sep Forecast (Percentile)



Thank you!

Matt Warbritton
Supervisory Hydrologist
USDA NRCS SSWSF
Portland Data Collection Office
matt.warbritton@usda.gov
503-307-2829

[Washington Snow Survey and Water
Supply Program Website](#)

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